

IRON AGE

NOVEMBER 29, 1951
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THE IRON AGE
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THE IRON AGE

DIGEST

of the week in metalworking

UNION PRICE FOR STEEL PEACE IS HIGH

PAGE 35 Phil Murray's price for peace in the steel industry is so high that the USWA and steelmakers will not reach agreement before expiration of existing contracts. Settlement by the government through hearings may be called for. A strike could start over what issues the board should handle.

TRADE STEEL MILL FOR RED-HELD OATIS?

PAGE 37 Bill Oatis, American newspaperman held by Czech Reds on spurious charges of espionage, may win his freedom if Czechoslovakia is given steel rolling mill equipment. Originally ordered by that country, the \$17 million mills are property of a Czech firm's agency here—which cannot ship.

STEEL GRAY MARKET SEEN DRYING UP

PAGE 37 More basis was given to reports of softening steel demand—especially in sheets—at a Senate small business committee meeting in Chicago last week. Subject was gray market operations. Links in gray market daisy chains were illustrated but demand was seen as offsetting the price spiral.

MOVE TO EASE SCRAP CAR BURNING CODES

PAGE 38 Need for scrap is promoting cooperation between auto graveyard operators and municipalities. Aim is freeing of a vast cache of jalopy scrap iron and steel. Civic make abatement policies have held back burning cars to remove trim. Detroit and Columbus are working out crisis plans.

PLAN PROBE OF SUBCONTRACT SET-OFFS

PAGE 55 The set-off system in subcontracting—which allows the prime contractor to withhold payments to recover debts or claims—is due for a lambasting in Washington. Officials of several federal agencies will make recommendations on revision of the system. Hearings will be held on Dec. 3.

NEW STEELMAKING PLANT SEEN FOR CALIF.

PAGE 65 Electric furnace plant expected in Los Angeles area. Harvey is expected to expand its aluminum fabricating operation. Pacific Northwest metalworking shops view the expected Alaska building boom with mixed emotions. They welcome the extra business, but fear labor shortages in the area.

IMPORTERS STIFFEN TOOL SALES DRIVES

PAGE 67 Although a few German machine tool builders say they are not bent on a concentrated invasion of the U. S. market, impressive sales efforts are being made by U. S. distributors on behalf of many German firms. Importers say they'll complement rather than compete with U. S. production.

CERMETS MAY FIND BIG USE IN JET ENGINES

PAGE 77 Pressed-and-sintered ceramic-metal mixtures are still in the experimental stage, but it looks like they will replace some strategic alloys in jet turbines. Hydrostatic and hot pressing seem the best forming methods. Materials on test include carbides, oxides, alumina, chromium, and beryllium.

CHIP CONVEYOR HANDLES 6 TONS AN HOUR

PAGE 81 Two main conveyers and 26 feeders collect cast iron chips in the Oldsmobile Rocket engine plant. The system delivers chips direct to hoppers above a railroad spur. Chips fall directly into conveyers from most machines, are swept through floor gratings from others. Big labor savings result.

XERORADIOGRAPHY USEFUL INSPECTION TOOL

PAGE 86 Xeroradiography, a novel X-ray method, offers several advantages in industrial radiography. Plates may be used repeatedly and are not spoiled by exposure to light, X-rays, or radioactivity. Image is developed by a simple, dry method. The images are readily transferred to ordinary dry paper.

EXPECT TIGHT STEEL MARKET FOR 6 MONTHS

PAGE 119 Collapse of the steel gray market and flat-rolled steel conversion business hasn't weakened demand at the mill level. Pressure for steel is expected to continue strong for at least the next 6 months. Plates are so tight NPA is out canvassing all mills to see who can handle more plate orders.

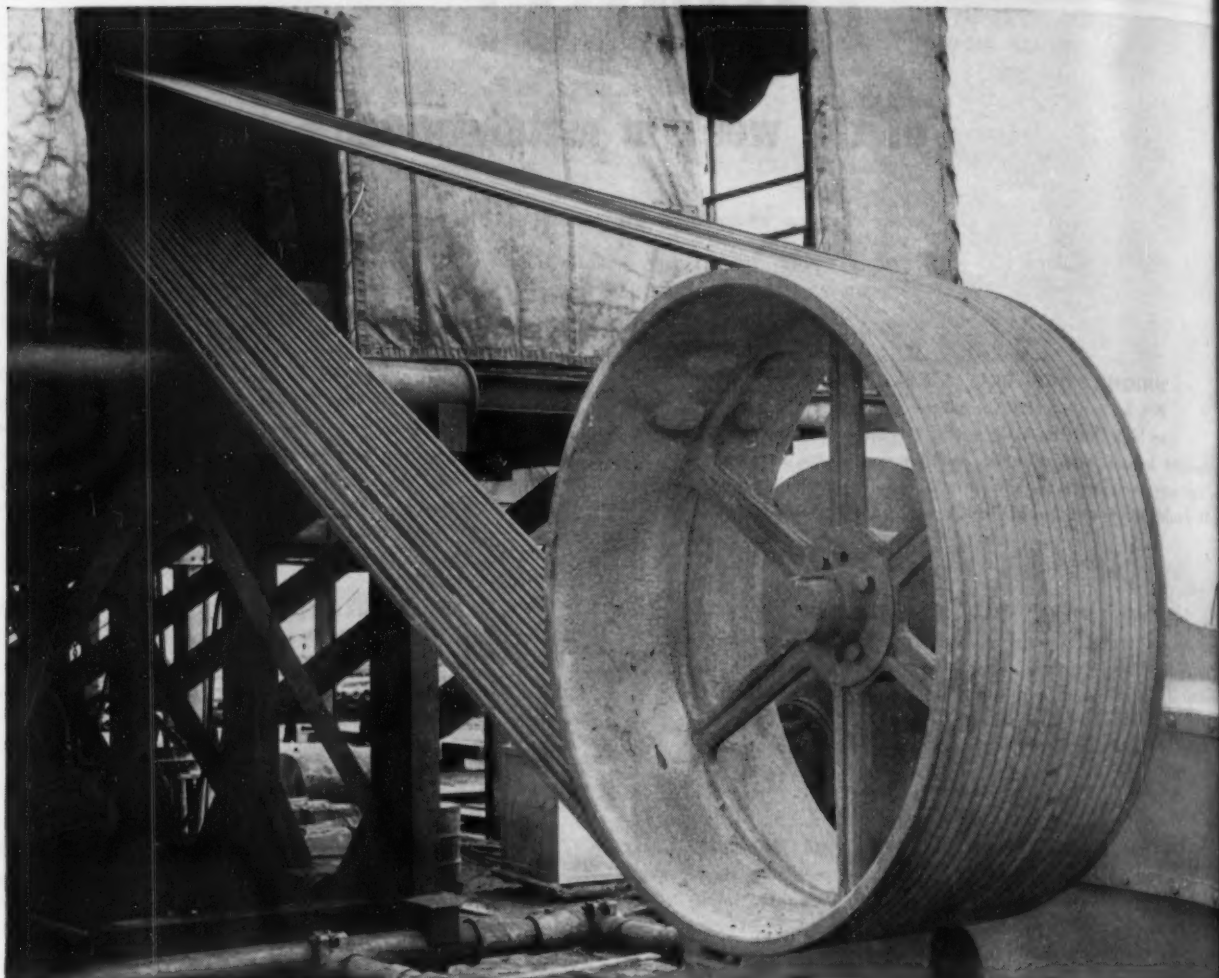
ELECTROFORMING PRODUCTION SUCCESSFUL

NEXT WEEK Extra-sharp corners and points, intricate contours, and especially tight tolerances are some of the production difficulties electroforming can solve. The method is equally adaptable to short experimental runs or to large production runs. So it is especially useful in developing new products.

RESEARCH KEEPS

B.F. Goodrich

FIRST IN RUBBER



Here B. F. Goodrich grommet belts are saving \$104.50 a month

B. F. Goodrich grommet V belts cut costs 20 to 50%

THESE 18 V belts are needed to drive heavy pumps for drilling oil wells. The belts have to operate 24 hours a day, 7 days a week, in all sorts of weather. Ordinary belts couldn't stand the heavy pulling load, couldn't take the strain of round-the-clock operation. They averaged 9 months' life in this kind of service.

Then B. F. Goodrich grommet belts were tried. After 19 months, and drilling wells totaling 76,000 feet deep, these grommet belts look as good today as the day they were installed. Here's why B. F. Goodrich grommet belts can be counted on to save on belt costs:

No cord ends — A grommet is endless, made by winding heavy cord

on itself to form an endless loop. It has no overlapping ends. Because most of the failures in ordinary V belts occur in the region where cords overlap, the endless cord section in a grommet V belt eliminates such failures.

Concentrated cord strength — All of the cord material in a B. F. Goodrich grommet multiple-V belt is concentrated in twin grommets, positioned close to the driving faces of the pulley. No layers of cords to rub against one another and generate heat; cord and adhesion failures are reduced.

Better grip, less slip — Because a grommet is endless, a grommet V belt is more flexible, grips the pulleys better. Size for size, grommet multiple-V

belts will give $\frac{1}{3}$ more gripping power, pull heavier loads with a higher safety factor.

Only B. F. Goodrich has the grommet! — No other multiple-V belt is a grommet V belt (U. S. Pat. No. 2,233,294). Now available in C, D and E sections. See your local B. F. Goodrich distributor. The B. F. Goodrich Company, Industrial & General Products Division, Akron, Ohio.

Grommet V Belts BY

B.F. Goodrich
RUBBER FOR INDUSTRY

Lost: Scarce Steel Scrap

WHEN an American mill makes a ton of steel ingots about one-fourth of the ingot remains within the mill as "home scrap." Home scrap is one of the raw materials used to make more steel. Usually one ton of home scrap, plus one ton of market scrap, plus two tons of pig iron are needed to make four tons of steel ingots.

We are short of scrap in this country. If home scrap were not available to steel mills they would have to get additional market scrap. That would be tough because not enough market scrap is now available. That's the reason for scrap drives.

Home scrap is generated in the mill as the ingot is rolled down into finished steel items such as plates, sheets, bars, etc. It doesn't make any difference who gets the ingot, that's what happens—the home scrap is left in the mill to be used over again.

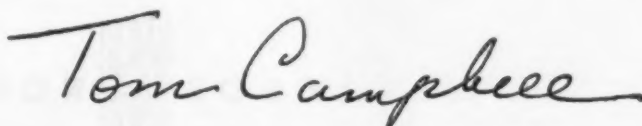
Recently Manly Fleischmann, head of Defense Production Administration and National Production Authority, made a deal with the British for aluminum and scarce materials. It may not have been such a bargain after all.

England is to get, in the first quarter of 1952, 46,000 tons of steel ingots. This means we will export 11,500 tons of home scrap. It will be permanently lost to our mills. It would have been the home scrap base for the production of 46,000 tons of additional steel ingots here.

Another part of the deal is to be the diversion of 28,500 tons of German scrap to England. That scrap was to have come to this country and American steel mills were counting on it to alleviate the scrap shortage at home. That tonnage of scrap would have been the purchased scrap base for 114,000 tons of steel ingots here.

It would have been better for us if England had been allocated finished steel. As the bargain now stands Mr. Fleischmann has traded away enough home scrap and market scrap (on the basis of a 50 pct total scrap charge) to produce 80,000 tons of steel ingots in this country, or let's say he lost us 80,000 tons of steel.

In supplying us with aluminum England is "loaning" it to us. In effect, she wants her home aluminum scrap returned. We will never get our steel scrap back.


Editor

3 reports

On the new Steam Homo method for bluing

1 *Solves cadmium shortage*

The cadmium shortage caught a New England plant with its inventory down. At the suggestion of an L&N field engineer, they used a Steam Homo already in their heat-treat to blue some sample parts. Now, 80% of the parts that were previously cadmium plated on one of their products are blued. When cadmium is again available, they intend to stick with Steam Homo bluing. Close fitting parts operate smoother . . . costs are lower . . . and, they never have to worry about a steam shortage. Another Steam Homo is on order.

2 *Eliminates hazards*

A large manufacturer of tools didn't like the smell and hazards of the bluing method being used on die stocks and tap wrenches. After a demonstration, the firm switched to the Steam Homo Method. Now, operating people are happy . . . working conditions greatly improved. So many other uses for this versatile furnace have been found that now there are seven Steam Homos . . . with four more on order.

3 *Better corrosion resistance*


A large midwestern manufacturer tested several methods of bluing stators and rotors of electric motors. Parts were blued, and then placed in a humidity cabinet at 100% humidity and 110 F until red rust appeared. Steam Homo blued parts were still in good shape after three months. The other parts had rusted in less than half this time. Now that the Steam Homo Method is an integral part of their production set-up, their inspectors claim that color uniformity and general appearance are the best they've ever seen.

THESE are typical examples of the results plants all over the country are getting with the new Steam Homo Method for bluing. Durable, uniform, corrosion resistant and eye appealing, this type of finish can be applied to any iron or steel product.

Because steam is used as the furnace atmos-

phere, the process is clean, non-hazardous and inexpensive . . . the Steam Homo can be installed directly in production lines.

To find out what the Steam Homo Method can do for your product, get in touch with the nearest L&N office or write to 4956 Stenton Ave., Philadelphia 44, Pa.

LEEDS  NORTHROP

Jrl A6 T-620 (54)

Dear Editor:

Letters from readers

Radiant Heat

Sir:
I am writing in reference to the article "Radiant Heat: Steel Leads Market Race" by W. V. Packard in your Oct. 18 issue.

I would like to state at this time that in my opinion this is a very fine article and has explained and brought out all the fine points of radiant heat. In reading this article I am sure that the readers will have a better understanding of the uses and the many advantages of radiant heat.

Congratulations on your splendid job.

S. H. NITZBERG

Atlantic Pipebending & Fabricating Corp.
Edgewater, N. J.

Plastic Pipe

Sir:
On p. 53 of your Oct. 18 issue reference is made to two firms now marketing a highly ductile steel conduit for radiant heating and two installations made with plastic pipe.

I would appreciate it if you would let me know the names of these two firms.

W. KRANZ

Newark, Del.

Manufacturers of ductile steel conduit for radiant heating are General Motors, Detroit; Bundy Tubing Co., Detroit; Thermopanel, Inc., San Jose, Calif. The only radiant heating installation with plastic pipe that we know of was made for the Pump, Pipe & Power Co., Portland, Ore. The plastic pipe was supplied by the Carlon Products Corp. of Cleveland.—Ed.

For Sale

Sir:
Would you kindly let us know if you are interested in purchasing any of the following back issues of THE IRON AGE which we are offering for sale. If so, please quote a price.

Volumes 157, no. 15; 158:13; 159:13, 24-26; 160:2-7, 9-26; 161:2-5, 7-9, 11, 12, 14-18, 20-26; 162:1-17; 163:1-26; 165:1-5, 9-14, 17-21, 23.

E. A. BAER
Assistant Librarian

St. Louis University Library
St. Louis

Reclaiming Alloys

Sir:
Our grinding department obtains, as a residue in the course of manufacture, a yearly quantity of about 100 tons of grinding dust comixed with

fine, highly alloyed steel chips, which material is being put aside and written off as waste. We are not aware of any method that would permit an economical separation of the grinding dust from the steel particles.

Would you kindly put us in touch, if possible, with a supplier of such separating equipment that would tend to solve our problem.

Steirische Gusstahlwerke A. G.
Wien, Germany

You will be interested in the article "Reclaiming Alloys From Tool Steel Mill Wastes" which appeared on p. 125 of our Nov. 8 issue. This is a method used by a metal shop to reclaim highly alloyed steel chips from grinding dust. Should you care to write directly to the authors of the article, we are sure they would be able to give you the companies who manufactured their particular pieces of equipment.—Ed.

Coated Rack

Sir:

On p. 100 of your Oct. 18 issue you show a photograph of how a coating protects center spline of a plating rack.

F. J. BOEHM
President

Standard Tube Sales Corp.
Brooklyn, N. Y.

The photograph was furnished by the Ohio River Valley Water Sanitation Commission, 414 Walnut St., Cincinnati 2, who may be able to give you further information.—Ed.

Roll Forming

Sir:

We are wondering if you can suggest textbooks or engineering publications giving up-to-date information on roll forming of sheet metal. We are particularly interested in the following: principles of sound layout; how many degrees per pass can be formed up; minimum bend in relation to thickness; when idler rolls can be used; surface speeds from one set of rolls to the next one; straightening methods for formed shapes; lock seaming; hardness of rolls—chrome plating; and cooling systems used and when to use.

J. E. BOND
Purchasing Agent

H. K. Lorentzen, Inc.
New York

Some of the information you desire can be secured from the book "Pressworking of Metals" by C. W. Hinman. Chapter 27 of this book will be of considerable help to you. There is also another book "Presswork Pressures" by C. W. Lucas, which illustrates hundreds of bending and forming operations.—Ed.

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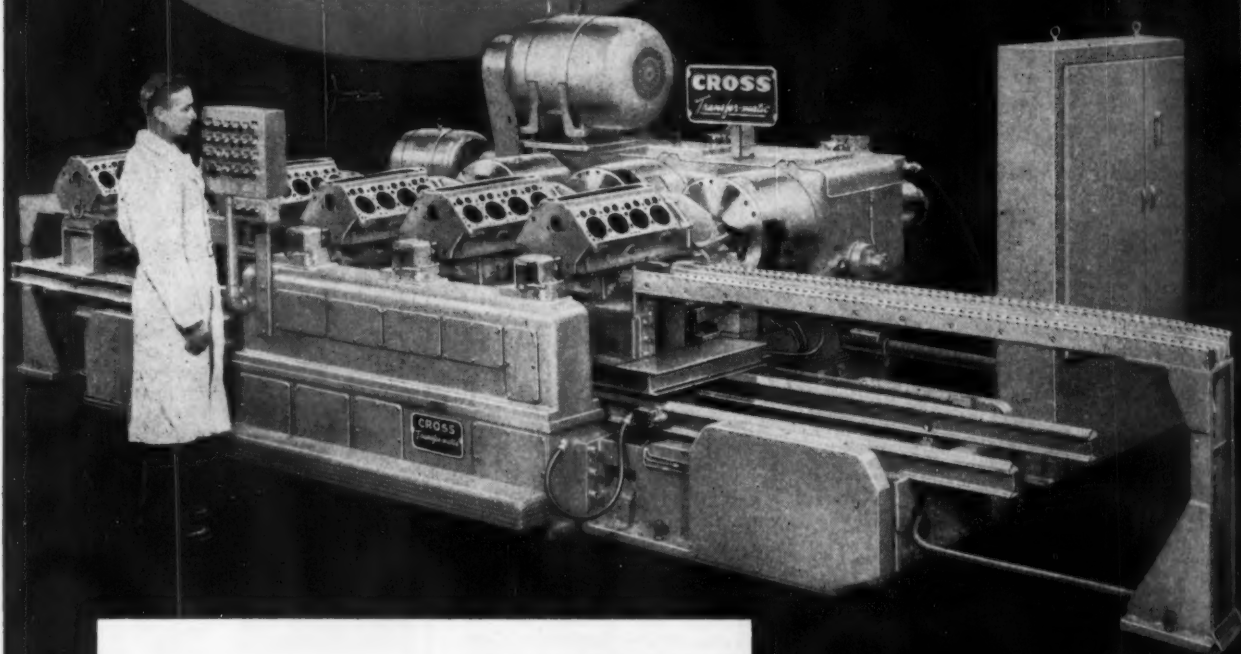
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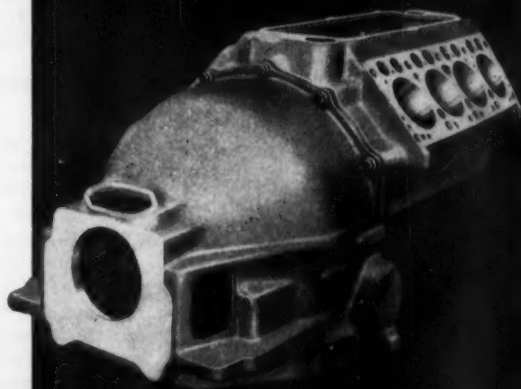
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Fatigue Cracks

by Charles T. Post

Sweet Music

Probably the hottest labor news story of the year was the report from Atlantic City a fortnight ago that the C.I.O. United Steelworkers would demand a guaranteed annual wage in their forthcoming negotiations with the steel industry. The story of how Phil Murray inadvertently tipped his hand to the press is even more interesting.

Barred from the union's top policy committee meeting at which wage demands were to be decided, the reporters left the hotel for a whiff of fresh air. When a small group of them, including your favorite family journal's John Delaney, drifted back a few minutes later, they were surprised to hear Phil Murray's soft Scotch brogue issuing from loud speakers in the lobby. Murray was persuasively recommending the annual wage demand, obviously before the closed session. Notebooks were whipped out in a jiffy. Soon a startled union sergeant-at-arms saw what was going on and rushed off to round up his forces.

The first union counter-attack came from John Pastin, union staff member from Elwood City, Pa., and a former orchestra leader, who dashed over to a nearby piano and pounded out a frantic concert. ("He played very well," reports Delaney.) Then the frustrated sergeant-at-arms picked up some silver from a service table and began banging on dishes. Despite this jamming, the gentlemen of the press were able to get the gist of Murray's words. But finally the speakers went dead. F. M. Hoffman, former Notre Dame football star, now a union legislative representative, had failed to find an electrician, ripped out the wires of the speakers with his bare hands.

With the excitement over and the cat out of the bag, it was discovered that the hotel had been wiring the public floors for canned music and announcements. Somewhere along the lines, the electricians had mistakenly connected the loud speakers to the microphone Murray was using in the secret meeting. Never before was union strategy known in advance by so many.

Government Plans

So you'll know how the government is planning to secure better balanced distribution and allocation of scarce materials, here are the key quotes our reporter noted

from a high defense official's speech in Washington last week: "... invigoration of substitution . . . maximize production . . . minimize the extent and duration of the materials shortages . . . quality of the substantive determinations which will be made by the properly delegated administrative agencies." Everybody clear on that?

And incidentally, when your f.f.j.'s teletype rang frantically last week, it turned out to be the National Production Authority inviting the editor to attend a meeting with Manly Fleischmann, NPA and DPA administrator. The meeting, the message concluded, was to be held nine days hence. The mails evidently have broken down completely.

Puzzle Champ

We're asking the mint to strike off a special award for A. Harold Frauenthal, president of the machine tool firm bearing his name and board chairman of Kaydon Engineering Corp. Out of an air mail package last week popped his undisputable answer to the Fatigue Cracks puzzler on the shape of a steel plug which would fit interchangeably a 1-in. square hole, a 1-in. round hole, and a 1-in. triangular hole in a steel plate. Mr. Frauenthal merely sent us a neatly tagged, carefully ground (presumably on one of his own machine tools) 1-in. diameter rod, 1-in. long, sharpened to a chisel point. Only trouble was that the plug was aluminum, not steel.

Puzzlers

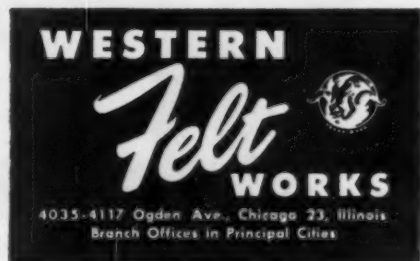
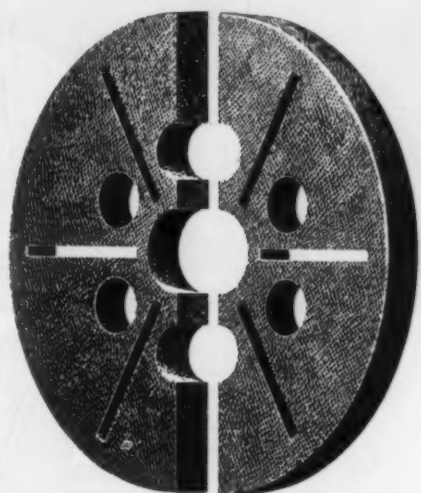
The answer to last week's puzzler was not 10 seconds as it might appear, but 11 seconds for the clock to strike 12 o'clock.

Two other answers to the three hole problem from R. W. Huff, Canton, Ohio, and J. A. Davenport, Cincinnati, were correct even though they didn't send a sample. C. E. Blass, Talon, Inc., agrees with the answer to the amoeba puzzle.

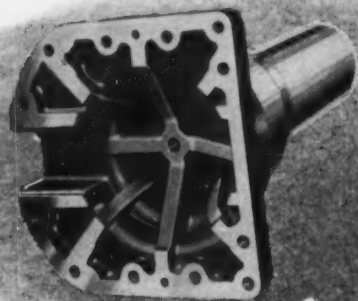
J. L. Knapp, San-Equip Inc. sent this one in quite some time ago. A 15 volume set of encyclopedias were lined up in order on a shelf. The width of each volume was 1 in. including the covers which were 1/4 in. thick. How far was it from the first page of the first volume to the last page of the last volume?



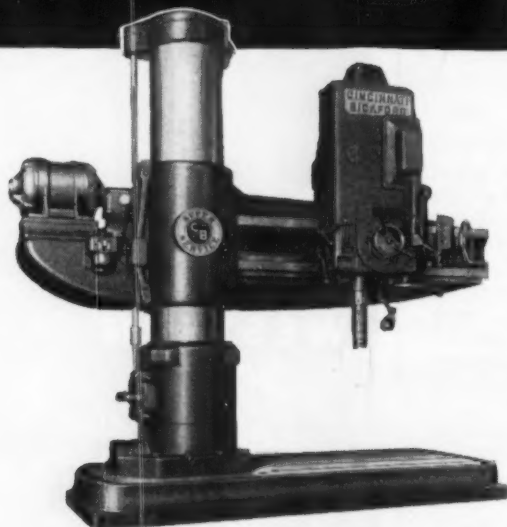
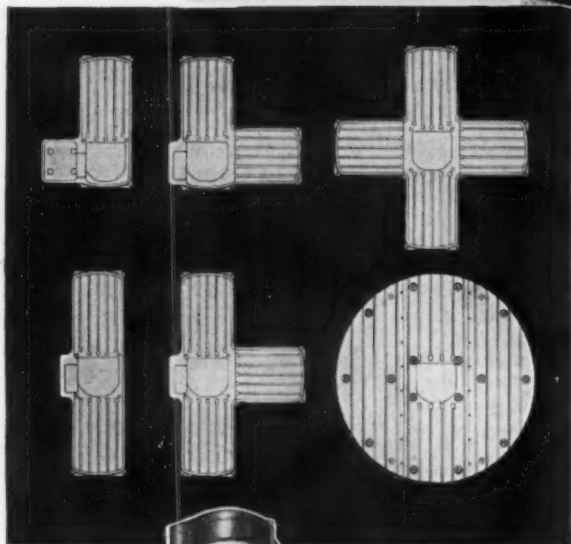
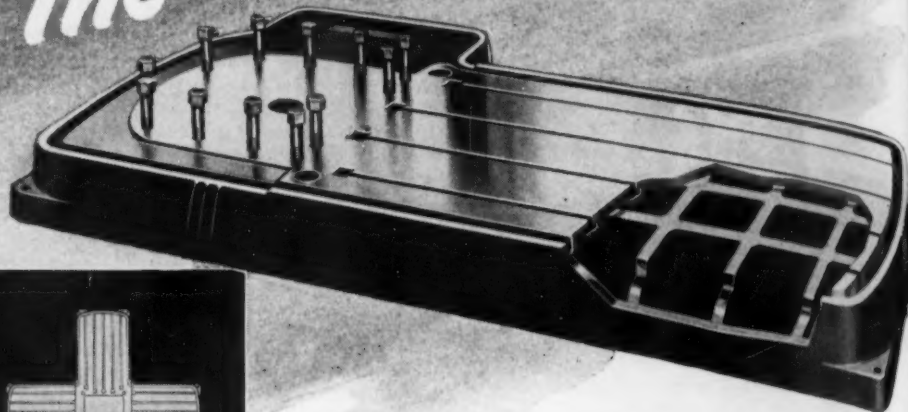
Western Felt users over a long period of years have placed their stamp of approval on a long list of its products. They know from experience the "plus value" in every Western Felt component part. Highest precision in its processing and cutting produces a uniformity that minimizes rejections—prevents failure of the finished product from felt causes. They are available from wool softness to rock hardness—never lose shape—do not ravel or fray—resist oil, water, age—are resilient, flexible, compressible—may be cut to close tolerances.



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From the Ground Up—



In the base starts the story of accuracy—deflections here are magnified in the column and the arm, and the whole machine loses the power to do the job correctly. Today new design bases again increase the accuracy of Bickford performance.

Many years of development are behind the base of a Cincinnati Bickford Super Service Radial Drill, and the many different types of base available all have the same basic deflection-free structure.

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Conventions & Meetings

Nov. 29-30—American Society of Mechanical Engineers, annual meeting, Chalfonte-Haddon Hall Hotel, Atlantic City. N. J. Society headquarters are at 29 W. 19th St., New York.

Nov. 28-30—Abrasive Grain Assn., annual meeting, Hotel Statler, Buffalo. Association headquarters are at 27 Elm St., Worcester, Mass.

Nov. 29-30—Machine Knife Assn., annual meeting, Waldorf-Astoria Hotel, New York. Association headquarters are at 1108 Clark Bldg., Pittsburgh.

Dec. 3-5—American Institute of Chemical Engineers, annual meeting, Chalfonte-Haddon Hall, Atlantic City, N. J. Institute headquarters are at 126 E. 41st St., New York.

Dec. 3-5—Institute of Cooking & Heating Appliance Manufacturers, winter convention and management conference, Netherlands Plaza Hotel, Cincinnati. Institute headquarters are in the Shoreham Hotel, Washington.

Dec. 4—Spring Manufacturers Assn., semi-annual meeting, Hotel Biltmore, New York. Association headquarters are at 249 Main St., Bristol, Conn.

Dec. 5-7—National Assn. of Manufacturers, annual meeting, Waldorf-Astoria Hotel, New York. Association headquarters are at 14 W. 49th St., New York.

Dec. 8-9—American Institute of Mining & Metallurgical Engineers, electric furnace steel conference, Hotel William Penn, Pittsburgh. Institute headquarters are at 29 W. 39th St., New York.

Dec. 10—Can Manufacturers Institute, annual meeting, Waldorf-Astoria Hotel, New York. Institute headquarters are at 1126 Shoreham Bldg., Washington.

1952

Jan. 5—American Home Laundry Manufacturers Assn., annual meeting, Morrison Hotel, Chicago. Association headquarters are at 38 S. Dearborn St., Chicago.

Jan. 8—Mining & Metallurgical Society of America, annual meeting, Mining Club, New York. Society headquarters are at 11 Broadway, New York.

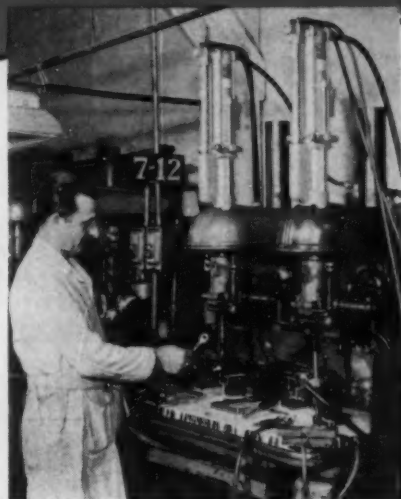
Jan. 8-9—Power Crane & Shovel Assn., annual meeting, Washington, D. C. Association headquarters are at 74 Trinity Place, New York.

Jan. 8-10—National Constructors Assn., annual meeting, Waldorf-Astoria Hotel, New York. Association headquarters are at 60 E. 41st St., New York.

Jan. 10-11—Aluminum Window Manufacturers Assn., annual meeting, Miami Association headquarters are at 74 Trinity Place, New York.

Production Increased up to 75% with GENERAL "Time-Saver" DRILL FEED at PROTO TOOLS Plant

At the main Los Angeles factory where PROTO Professional-Quality TOOLS are made—as at many other leading industrial establishments—GENERAL Time Saver Drill Feeds are sharply increasing production, prolonging the life of machine tools, providing a positive control that improves quality, and reducing operator fatigue. GENERAL Time Saver Drill Feeds are adaptable to most drill presses, operate on ordinary shop air pressure, and do not interfere with manual operation of the drill press. When you install GENERAL Time Saver Drill Feeds on your drill press equipment, you convert manual equipment to HIGH SPEED AUTOMATIC Production Machinery.



Experience of PROTO TOOLS with GENERAL Drill Feeds, as Related by Carl W. Coslow, Vice-President in Charge of Manufacturing

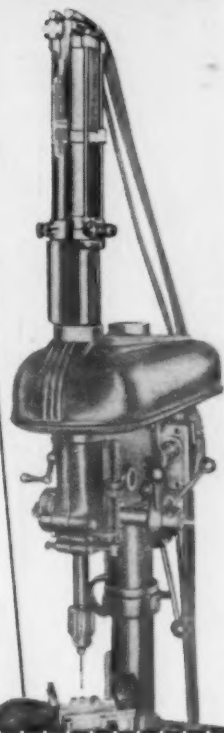
"Eight GENERAL drill feeds have been installed in our main PROTO plant since 1948.

"As you know, we make only professional-quality hand tools—manufactured to very precise and exacting standards. With your equipment, we are able to secure closer tolerances and more uniform results in drilling operations than with hand feed. The accuracy obtainable with hydraulic feed means that the finished parts meet our rigid inspection requirements.

"Naturally, we like the savings made possible by your Time Saver equipment. The automatic cycling feature, which permits one operator to control two spindles, results in production increases per operator up to 75%. Also, controlled power feed greatly increases the life of drills and counterbores.

"Another advantage is that hydraulic feed sharply reduces operator fatigue.

"Because of our favorable experience with GENERAL drill feeds, we recently added more units."



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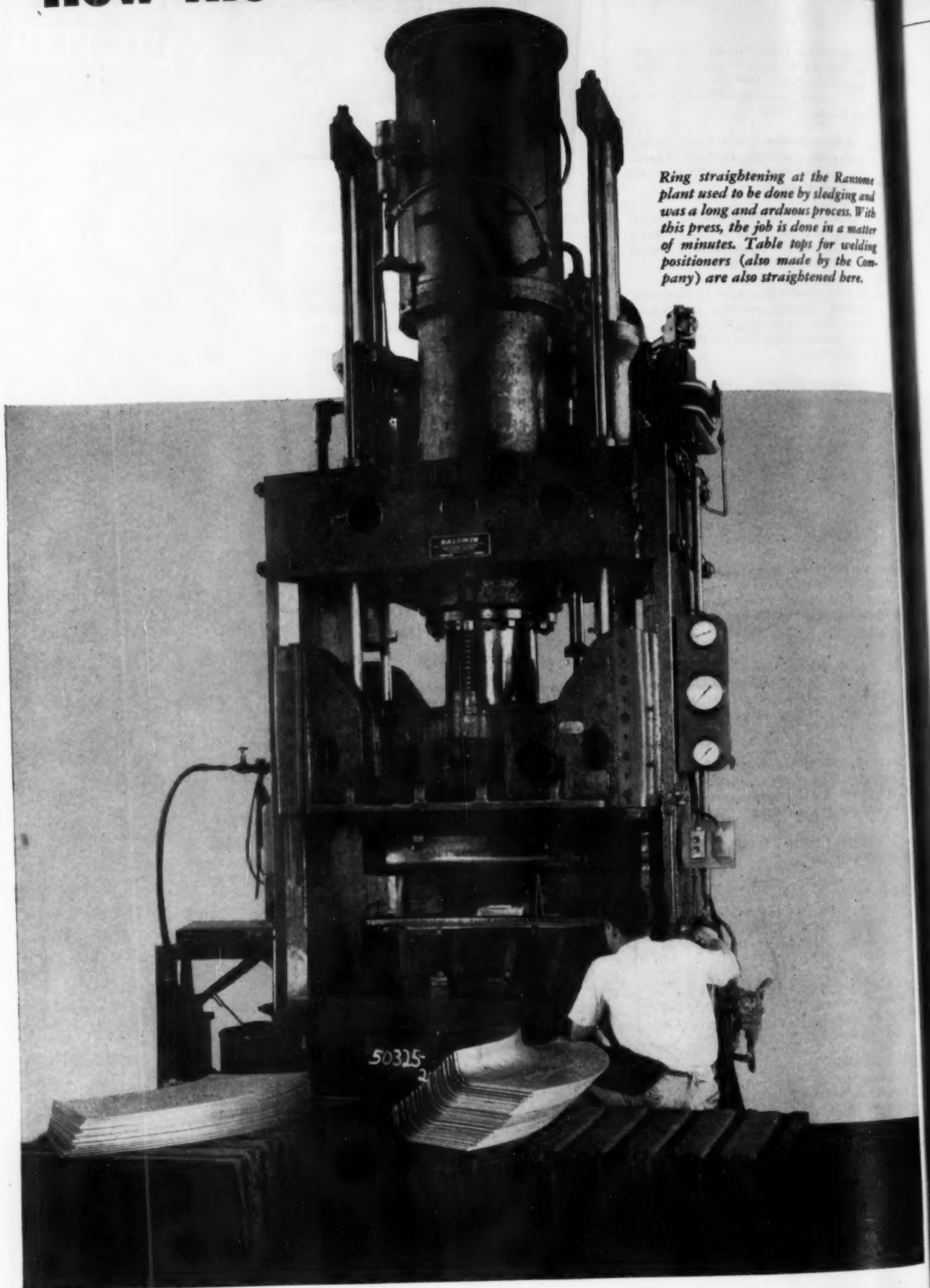
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FIRM _____
ADDRESS _____

THE GENERAL PACIFIC CORP.

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How the "Ransome" became an

Ring straightening at the Ransome plant used to be done by sledging and was a long and arduous process. With this press, the job is done in a matter of minutes. Table tops for welding positioners (also made by the Company) are also straightened here.



UNIVERSITY OF MICHIGAN LIBRARIES

THE IRON AGE Newsfront

► Defense mobilization officials expect to step up allocations of materials for steel plant expansion during the first half of 1952. Effort will be made to speed individual plant completions—meaning that if each of two new plants needs two cranes before they can get out any production, the aim will be to see that one plant gets two cranes rather than have each plant get one apiece.

In other fields Washington will review existing capacity, with a check on facilities available following civilian goods cutbacks, before approving new plant construction.

► Researchers working on recovery of manganese from openhearth slag have come up with preliminary figures which indicate that a recovery as high as 85 pct may be obtained economically.

► The oil well drilling program is going fairly well but in some cases it is costing more than it should. Hence the cries for more steel. The industry is expected to exceed its target of 44,000 new oil and gas wells drilled this year.

Some in industry deplore the paradox of domestic steel firms being told to export oil country goods while U. S. oil firms are importing a tremendous quantity at about double the domestic price.

► The tin situation has canmakers in an uproar—especially food processors. The latter have had their can requirements cut by as much as 10 pct. Beer and dog food have taken only a 30-pct cut. While the RFC plays poker with Bolivia in the hope of breaking world monopoly prices, steel companies have had to use most of their tin stocks. Only 11th hour transfer of tin from government stockpiles forestalls sharp cutbacks or curtailments at 35 can plants during the first quarter.

► One large iron ore development company in the Lake Superior region is quietly prospecting for iron ore around the Mesabi region. They are scanning old records and making new tests. If they are successful—and some people think they will be—the discovery would represent a new reservoir of open pit ore within U. S. borders.

► To meet the demands of mobile war, Army Engineers have developed a new self-contained gyro compass that weighs only 67 lb, contrasted with 550 lb in the World War II model. It will probably be 2 years before it can be accepted as standard.

► Machine tool firms making drilling and tapping equipment are keeping a watchful eye on precision casting and on shell molding. Ability of these processes to cast threaded holes is, of course, the reason, and automakers are investigating them very actively.

► The Labrador Exploration & Mining Co. which started the ball rolling on the Quebec-Labrador iron ore development, will probably start further prospecting for gold, copper, lead and zinc when the 360-mile railroad from the iron mine is finished. This was the company's original quest but the U. S. iron ore shortage diverted its efforts.

► Changes now being made in CMP are based on constructive criticism given by steel industry officials. If allowed to work they will be a definite improvement. But both DPA and NPA officials privately fear that carefully planned allocations may be wrecked by Congress. In other words, they fear legislation designed to make 2 plus 2 equal 8.

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STEEL: Union Price for Peace Too High

Steelmakers, USWA won't agree before contract expires . . . Government settlement likely . . . Strike possible on issues board would cover . . . List union demands—By J. B. Delaney.

Philip Murray's price for peace in the steel industry is so high that his United Steelworkers and steel producers will not reach agreement before expiration of existing contracts.

A government-imposed settlement seems the only way out. This would mean hearings before a fact-finding board, projecting the case into the New Year and raising the issue of retroactivity. Most basic steel agreements expire Dec. 31.

Meanwhile, don't discount possibility of an industry-wide strike.

Nobody on either side wants a strike. But some of the union demands involve important principles that many companies will not concede without a fight. The guaranteed annual wage and the union shop are examples.

Strike on Issues—A strike could result over the question of which issues the board will be empowered to rule upon.

Steel producers will agree to nothing that will increase their costs without some assurance of price increases to compensate. And at least ten of the 22 points in the union's wage program would increase costs—nine of them for the entire industry.

Several of the demands will increase the penalty for full utilization of equipment—demands for increased shift premiums, overtime pay for Saturday and Sunday, and paid holidays.

A point-by-point analysis of union demands follows:

(1) **Wages**—Under wage stabilization steel labor is entitled to

4.5¢ an hr. The union says this is not enough. This demand could wreck the stabilization program—unless an increase beyond the wage formula could be justified on some basis such as increased worker productivity.

(2) **Area Differentials**—Elimination of geographical wage differentials is sought. The union feels workers everywhere should be similarly compensated for similar duties. Present differential between North and South is 10¢ an hr.

This would affect only a few companies, notably U. S. Steel and Republic Steel. This is a long-standing union objective, perhaps made more pertinent by government encouragement of industrial decentralization which will speed industrialization of the South.

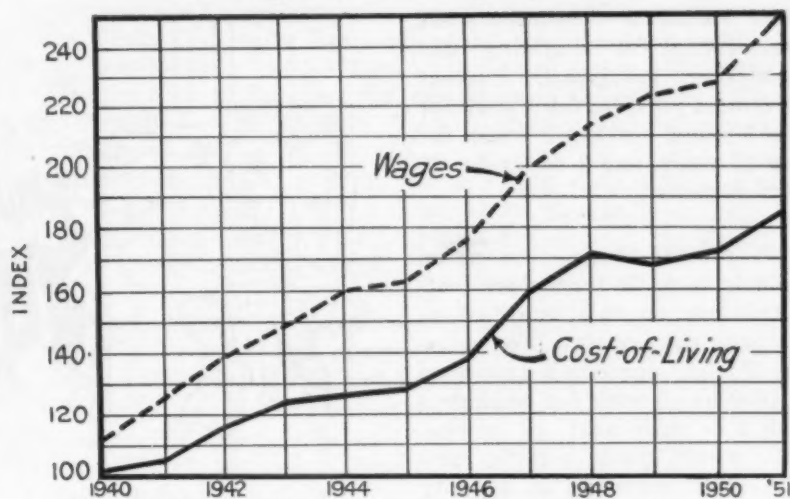
(3) **Inequities**—The union wants to clean up all wage and salary inequities, although most companies have already done so. Another objective is adjustment of iron ore, aluminum and nonferrous mining and manufacturing rates and fabricating plant rates to eliminate inequities and bring about improvements.

The union may want to raise miner wage levels to a par with steel plant workers—not now the case in some companies.

(4) **Shift Premiums**—Increase of shift premiums and improvement of their application. Existing premiums are 4¢ an hr for afternoon shift and 6¢ for night shift. Since virtually all plants are working three shifts, an increase in these differentials would be costly to the steel producers.

(5) **Severance Pay**—The union's loosely-worded demand on severance pay would be construed to cover employees discharged or

Steel Wages, Cost-of-Living Gap Widens



SOURCE: Cost of living from Bureau of Labor Statistics. Wages are average hourly earnings in steel industry reported by American Iron & Steel Institute. For both series, 1935-39 base equals 100. Wage base computed by The Iron Age.

who quit voluntarily. The union also wants payment of compensation to employees demoted due to abandonment of facilities or technological change.

This would lead to all sorts of complications. Existing severance clause covers only workers unemployed because of discontinuance of a plant or department. No compensation is provided for workers given lower-paying jobs.

(6) Overtime, Paid Holidays— Time and one-half is now paid for work in excess of 8 hr in a workday or in excess of 40 hr per week. The union wants time and one-half pay for Saturday and double time for Sunday regardless of whether an employee is working overtime hours. Time and one-half is now paid on six holidays—if worked.

The union would increase the number of holidays to eight, for which workers would be paid the straight hourly rate. If they worked, they would receive premium pay plus holiday pay.

(7) Reporting Allowance— Workers now receive 4 hr pay if they report for duty and are not given work. The union claims some of its people do not receive reporting time, and evidently wants to tighten up this clause.

(8) Vacations—The union seeks liberalization of eligibility and scheduling provisions. Current agreement provides for 1 week for 1 to 5 years' service, 2 weeks for 5 to 25 years, and 3 weeks for 25 or more years.

(9) Annual Wage—The union is likely to settle for a mere foot-in-the-door on this one just to establish the principle. For example, it might agree to a guarantee of 1000 hr of work for employees with 5 or more years of service. This would mean nothing now with mills operating at capacity and providing 2000 hr or more work.

But once the principle is established, the union would press for

increasing the guarantee and reducing service requirements. There will be a battle royal over this one. That is, unless Mr. Murray trades it off for something else—say the union shop. "I rate it very important," he says.

(10) Incentives—It is no secret that the union feels it is getting nowhere with the so-called work load philosophy on incentives. "This has caused us more concern than any other matter," says Mr. Murray. The union wants to adopt a new approach. It may toss into the negotiations the "Full Equipment Utilization" plan agreed upon by Jones & Laughlin and its local unions.

Murray has often expressed his belief that a man sets his own pace on the job and should receive bonus pay for exerting more effort than normal. He is impatient with work loads based on industrial engineering principles.

(11) Union Shop, Check-off— The union wants to bring everybody into the fold as a condition of employment. It is likely to settle for the type of agreement entered into with Crucible Steel and others whereby present workers not in the union can stay out if they choose. At stake here are something like 50,000 basic steel

workers who are non-members. The union has made a good showing in union shop elections, but nevertheless will meet industry resistance on this demand.

(12) Seniority—A lot is at stake here. One thing the union is after is to make seniority the sole governing factor on job preference. At present seniority applies only where all other things are equal. Otherwise ability to do the job applies. There is conflict, too, over the present system of plant, departmental, and job seniority.

The union also wants to extend a sort of super seniority to International Union or local union employees as well as to local union officers, grievance committeemen and assistant grievance committeemen as is now the case in most plants.

(13) Arbitration— The union wants to speed up processing of grievances and arbitration cases. Some observers believe the union may want to abolish some steps in the grievance procedure. Some of the demands on this point will encounter sharp resistance.

(14) Contractors— The union wants its members to do all work around plants and ore mines, eliminating outside contractors. The companies will argue that this is impossible because they are not equipped and do not have the necessary skills.

They say they are not in a continuous program of expansion, that present construction work is extraordinary. One thing that has always rankled U.S.W.A. members is overtime pay to A.F.L. workers on construction jobs. The companies argue this is necessary for two reasons: (1) to speed the job, and (2) to hold the workers.

One demand that may prove a "sleeper" is this one: "Failure to work at a unilaterally imposed incentive pace shall not be regarded as a violation of the contract." The union could use this as a weapon in refusing to work on a job with an incentive rate it did not like.



"Believe it or not the workers' wives objected. She was cutting down incentive pay."

STEEL: Gray Market Drying Up

Hearings point up daisy chains and triple mill prices . . . but testimony reveals market is correcting itself . . . Consumers losing interest in gray market offerings—By E. C. Beaudet.

Reports of softening steel demand, particularly the sheet variety, were given more foundation last week at a Senate small business subcommittee hearing on gray market steel operations held in Chicago.

To illustrate the various links in a gray market daisy chain operation, the committee, headed by Sen. Blair Moody, D., Mich., traced several eastern mill shipments at around \$5.20 per 100 lb through six different hands and finally ended up in Midwest plants at about three times the mill price. Mr. Moody recommended that specific dollars and cents price ceilings be put on steel to discourage such practices.

Market Correction—However, from the testimony of steel brokers and distributors testifying before the committee, it seemed the situation was taking care of itself. Premium prices on sheets have dropped from \$20.70 per 100 lb to around \$8 at the present time, with fewer buyers reported.

Several reasons for the declining market were given at the hearing. Government limitations on consumer durable goods production are a prime factor. Added to this is steadily increasing steel production together with rising inventories in certain industries. Foreign steels handled by distributors have priced themselves out of the market. CMP is having a drying up effect.

Broker Blues—One witness, a broker in machinery, scrap, and steel, reported that the drop in the market has forced him out of the steel brokerage business. A distributor reported that he has some items he can sell at below mill prices but can't find any takers. As an example, he pointed out that he is having difficulty dis-

posing of a carload of hot-rolled prime coils, full size, at \$4.60 per 100 lb. A few months ago it would have been snapped up.

The softening market, it was revealed, has caught many distributors with high-priced inventories. In an attempt to get out from under they are flooding the market and making offerings at greatly reduced prices.

Mill Demand Holds—More steel is also flowing from plants offering surplus inventories. Distributors claimed they have had an abundance of offers of substantial tonnages from plants in the last 60 days. The selling prices range from \$7.85 to \$10.50 per 100 lb, a far cry from the "penny a gage" prices heard not so long ago.

While the demand for gray mar-

ket steel has weakened considerably regional NPA officials at the hearing claim it is still as tight as ever at the mill level (mill sources verify this). However, they did reveal that in the last 3 months they have had fewer complaints from small businesses asking their assistance in steel procurement. Consumers seem to be having an easier time filling their allotments.

Non-Magnetic Ore Beneficiation

Cleveland-Cliffs Iron Co., Cleveland, and Ford Motor Co. will soon market a non-magnetic hematitic jasper ore to steelmakers. The iron ore is similar to Minnesota non-magnetic taconite and will be beneficiated by a flotation process.

The plant will be located in the Marquette Range, Humboldt, Mich., and is expected to produce up to 400,000 tons of concentrates per year. Concentration and beneficiation of non-magnetic ore has long been considered economically impractical. Yet the joint announcement indicates that a not-too-costly process has been evolved.

Trade Steel Mills for Red-Held Oatis?

Steel rolling mill equipment built originally for use in Czechoslovakia may be used in a trade for the freedom of Bill Oatis, American newspaperman. Reports from Washington indicate thinking along those lines within the Dept. of State.

Meanwhile, the \$17 million mills are still the property of Mining & Iron Works Co., major Czechoslovakian steel producer, which ordered the equipment in 1947 from United Engineering & Foundry Co. Between time of the order and completion of the mills in 1950, Czechoslovakia became an Iron Curtain country and an export license was refused.

Equipment consists of a 66-in. hot and cold strip mill, and a 4-stand 64-in. cold mill. It is in custody of Dr. George Riegel, representative of the Czech mill, who placed the orders. Dr. Riegel maintains an office in Pittsburgh.

Kept Here—Heavy equipment, including housings, is stored in Philadelphia, semi-electrical equipment in Troy, N. Y., and lighter machinery at the New Castle and Youngstown plants of United.

Attempts have been made to sell the mills in this country. Originally an English firm tried to market the equipment, but has since dropped out of the picture. A New York export-import company is now trying to dispose of it here.

A U. S. purchaser would be required to re-adapt electrical equipment from 50-cycle to 60-cycle by changing the windings. Also, the equipment is incomplete.

SCRAP: Ease Car-Burning Codes

Shortage of scrap prompts more cooperation between cities and auto graveyards . . . Columbus and Detroit work out plans . . . Provide for use of car incinerators—By W. W. Taylor.

Need for prying open civic smoke abatement bottlenecks to vast caches of scrap iron and steel in automobile graveyards is fostering cooperation between wreckers and municipalities. Common-sense ordinances to legalize feasible car burning procedures are evolving because of the steel industry's scrap crisis.

Graveyard operators must set the car hulk on fire to burn out all the nonmetallic car trimmings before they can release the jalopy into scrap channels. Civic ordinances and smoke abatement programs have been holding back the flow of auto wreck steel.

Detroit Plan—Now a few cities have shown a willingness to lower their standards. Detroit and Columbus, Ohio, have worked out plans—meeting acceptance of wreckers, smoke abatement officials, and local fire departments.

Last month the Detroit Bureau of Smoke Inspection and Abatement circulated letters to all wreckers suggesting mainly:

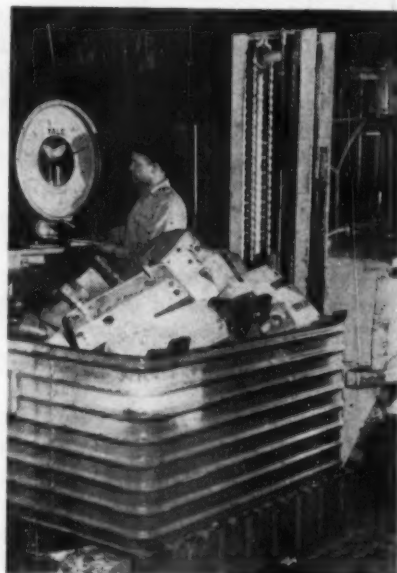
- (1) Car burning will be allowed if Fire Prevention Bureau determines there is adequate space and provision for fire fighting equipment.
- (2) Not more than two cars burned at a time.
- (3) Gasoline prohibited in starting fires.
- (4) Cars will be burned only between 3 p.m. to 6 p.m.
- (5) Bodies to be stripped to such a degree as to eliminate excessive smoke when burning.

Cooperation under these conditions, plus the use of a makeshift type of incinerator with flue pipe entitles the wrecker to a burning permit. Such permits will be revoked if non-conformance is reported.

Columbus Acts—In Columbus this week, Smoke Abatement Commissioner Harry J. Ballman told THE IRON AGE that all are cooperating, but "full responsibility is left to the auto wreckers."

The plan was worked out with suggestions from the Smoke Abatement Commissioner, a Fire Prevention Officer, National Production Authority district and regional officials, and auto wreckers themselves. The agreement, as it is called, differs from Detroit's plan.

Columbus will allow only one car to be burned at one time, while Detroit allows two. Detroit prohibits use of gasoline to ignite fires while in Columbus the use of gasoline is suggested. Commissioner Ballman points out that by using the gas left in the car's tank the possibility of accidental explosions while burning is reduced and dangerous "gas dumping" is avoided.



SCRAP: Another 1000 lb of non-production scrap is weighed at Yale & Towne Manufacturing Co.'s Philadelphia Div. The five domestic divisions of Yale & Towne have salvaged 1,070,122 lb of scrap metal this year.

Need Incinerators—The Columbus proposal also suggests burning be done between 8 a.m. and 3 p.m.; that part of day when smoke is more likely to rise because of thermal attraction. Moreover, Commissioner Ballman feels fire equipment would experience less traffic congestion if summoned during these hours.

Both Detroit and Columbus plans require some type of incinerator. Design is unimportant as long as it confines burning area and induces sufficient draft to send smoke skyward. Materials used in construction are unimportant. Columbus does specify the approximate size to be 10 ft wide by 20 ft long with at least 50 pct of the top area closed. A stack 20-30 ft from the ground, is recommended but may vary under certain conditions.

There are other signs of loosening civic ordinances. Even West Coast officials have been conducting burning tests with an eye to increasing the graveyard yield.

Material Lack Hits Chicago Area

A survey of 487 companies in the Chicago area served by the Chicago Assn. of Commerce and Industry revealed that one-fourth of them expected operating losses, labor layoffs and a decrease in sales during the fourth quarter of this year. Main reason for these unfavorable predictions was material shortages.

About 23 pct of the companies reported that they could not operate profitably on civilian business alone during the fourth quarter. Of these, 52 pct said that they could not even operate profitably if defense business were added.

Inability to obtain their entire allotment of steel, copper and aluminum under the Controlled Materials Plan was reported by about one-half of 302 manufacturing and construction companies surveyed. Fully 32 pct of those reporting inability to get controlled materials under their allotment tickets reported that they were able to make up the difference in the open market.

TIN: Can Makers Ask Resumed Buying

Allocate 7500 tons for first quarter tinplate use . . . Can makers want more, cite surplus world production . . . See possible steel-for-tin deal with England—By R. L. Hatschek.

The tin situation is rapidly approaching a climax. Can makers are raising a fuss to get more of the metal. The government mission is about to make a report on the Malayan tin industry. Reconstruction Finance Corp. has not been able to come to any long-term agreements with foreign producers. RFC stocks of tin total only 11,340 tons and the government smelter is producing at a rate of about 1600 to 1700 tons per month.

The tinplate industry has been allocated 7500 tons of pig tin for use during the first quarter of 1952 after stating minimum requirements of 7755 tons. Can manufacturers point out that current world production exceeds consumption and, hence, a shortage at this time is ridiculous.

Ask New Buying—Tin buying should be resumed immediately, say members of the can industry. It should be done either by RFC or private concerns—even if higher prices must be paid. The industry's committee in Washington recently said an increase in tin prices would make little difference in can costs to the public.

But RFC is still holding out for a \$1.12-per-lb price. The single tin-buying agency in the country is reported to feel that its stand is protecting the entire world tin price set-up—as well as preventing the gouging of the U. S. on other imported raw materials. Bolivia is standing pat on its offer of tin for \$1.50.

Among the many arguments about production costs, slipping dollar value, Bolivia contends its asking price is well below the U. S. ceiling of \$1.83. RFC's point is that the real price is \$1.03. Office of Price Stabilization, says RFC, is going to slap a realistic ceiling on tin as soon as a long-term contract can be negotiated.

The London and Singapore markets are hovering at the c.i.f. New York equivalent of about \$1.20 and some tin can makers feel \$1.25 would be fair enough for all concerned.

Bolivia is not the only source of tin and interested parties are now awaiting the report of the government's recent tin mission to Malaya.

Steel for Tin—Great Britain wants more American steel and there is hope for some international horse trading. Speculators feel Churchill's government will be more cooperative with the U. S. in regard to tin and the world markets took a slight dive at the time of the Conservative Party victory in England.

Meanwhile, tin consumers here want the problem settled.

New Ore Mines, Transport Planned

During the next 2 years the Cleveland-Cliffs Iron Co., Cleveland, will spend approximately \$45 million on expansion. Program will involve development of addi-

tional iron ore mining operations and ore-carrying capacities.

More than half the expenditure (\$28 million) will be used for production of new ore fields, replacing properties now becoming exhausted. The company's principal iron ore properties are in Michigan, with additional fields in the Northwest.

Ore-carrying facilities, including a fleet of Great Lakes ore vessels, will be enlarged and improved. Expansion of these facilities will include construction of a new ore carrier, the *Edward B. Greene*. The new carrier will be named for the board chairman. *Cliffs Victory*, a converted Victory ship, was purchased from the U. S. Maritime Commission and put in lake service this season.

Sulfur Need Tops Output

International Materials Conference has marked the end of its initial phase of operations by estimating that total free world production of sulfur and sulfur-containing raw materials in 1951-52 will reach 23,890,900 long tons.

Even so, IMC warns, the potential consumption for the 2-year period exceeds production figures by more than 3,000,000 tons. This disparity is not expected to be reduced by output from the newly-discovered sulfur dome in Louisiana, which may not produce until late 1953.

World demand for all types of sulfur and sulfur derivatives increased by 32 pct between 1949 and 1951. The increase probably will reach 40 pct in 1952. This greater requirement, according to IMC, is a result of expansion in use of sulfuric acid, sulfur dioxide, carbon bisulfide, and fertilizers.

Control officials have been meeting with industry representatives to arrive at an order restricting U. S. consumption to below 1950 levels. Two possibilities are being considered—use limitation or direct allocation. Industry prefers a direct allocation order modified to permit the scheduling of barge and vessel shipments.



"This ought to get us some publicity."

GOODWILL: How to Sell the Public

Youngstown district 4-I sells community on the role of industry . . . No secrets, just hard work, common sense . . . Stress on educational work . . . Hits all groups—By J. B. Delaney.

Youngstown district industry plans to capitalize on the loquaciousness of the barber. Industry leaders realize that barbers are as much molders of public opinion as educators, or clergymen. They are doing something about it.

Through Industrial Information Institute, Inc., coordinating agency for industrial public relations in the area, 250-odd barbers soon will receive personal letters inviting them to take a first-hand look at what makes business and industry tick.

The barbers will be taken on tours of district industrial plants. They will talk with company officials. They will ask questions. Even if they learn just a little, both industry and the barbers will benefit.

It wouldn't surprise anybody in Youngstown if bartenders were next on the list. Or beauticians. Or Boy Scout leaders.

Sells Itself—Because it would be typical of the thorough-going way that industry, through the Institute, has been selling itself to the community during the last 4 years. Nothing fancy. No astronomical budget to work on. Just hard work and common sense—and plenty of willing salesmen.

The Institute's "community" is a four-county area in Ohio and Pennsylvania, including Youngstown, Warren, Alliance, Niles, and Salem, Ohio, and Sharon, Pa.

Particularly outstanding is the job being done in the schools. The Institute has produced supplementary readers for third, fourth, fifth, sixth, and eighth grades. A seventh grade reader will be published in January, and one for ninth grade is being written. Also in the works is a vocational manual for senior high school use.

The readers are of an historical

nature. Typical titles are, "Beginnings of Our Community" and "The Growth of Our Community." Teachers use them as they see fit. A survey indicated that they *do* use them. The schools pay a nominal charge for the books, have bought 70,000 so far.

What the Schools Want—Secret of the program's success: The schools are getting what they want. A committee of educators outlines content. An educator writes them. Nobody gets a plug. The books are well written, well illustrated, and in accepted textbook format.

All that industry hopes to achieve is a fair presentation of its role in community development.

In a recent series of plant tours, 670 teachers visited 40 industrial plants. Other special "publics" of 4-I include clergymen, professional people, PTA groups, fraternal, veteran, and political organizations, and women's clubs.

Largely using amateur photographers and talent, 4-I has pro-

duced two movies. One cost \$1800, the other, in color, \$2500. They have been seen by close to 50,000. The Institute produces and records a weekly radio program carried as a public service by six area stations. It serves as clearing house for a speakers service, with 16 men available to clubs and other groups. It is taking a "Public Relations Inventory" with a view to outlining a minimum PR program for member companies.

Film Library—The Institute maintains a library of industrial films. Its comic book on American enterprise, "You Hit the Jackpot," has been distributed to 200,000 people. Each year it produces a composite annual report on profits of district industry. It sponsors industrial displays and exhibits, offers assistance to editors of employee publications, and cooperates with district press and radio.

The Institute operates on a budget of approximately \$60,000 per year. Member companies contribute \$1 per employee per year. R. B. Collins, director, heads a staff of five. William J. Sampson, Jr., is president.

GE Plans "Standby" Plant

Quick access to war production industrial capacity for any emergency periods arising in the future is the purpose of General Electric Co.'s newly-created Defense Products Div. GE would put part of its plant and labor force into semi-standby status if necessary to maintain an industrial core that can swing into war output almost immediately.

Aircraft gas turbine department producing jet powerplants at Lockland, Ohio, and the aeronautics and ordnance plant at Schenectady, N. Y., would be included in the system.

Head of the new division is John W. Belanger, who was promoted to vice-president. He was formerly general manager of GE's apparatus division. GE pointed out that responsibility for being prepared rests under one authority—Mr. Belanger's.



"Please, Mr. Longache, remember your capacity rating!"

SHIPMENTS: No Time to Gather Dust

Timken Roller Bearing steel plant has planned system of materials handling . . . Production scheduling balanced to handling . . . Trucking firm opens shipping yard next to plant.

You couldn't see the steel mill for the steel—until Timken Roller Bearing Co. materials handling men emptied stacks of billets and blooms into two adjacent yards. Now the view is clear and Timken is realizing savings in time and costs by shipping steel out in a regulated order—not giving it time to accumulate.

Before, valuable mill space was cramped by piles of steel awaiting shipment. If an order was buried under other steel, Timken had to remove the top of the stack to ship out the bottom. Trucks and equipment had a narrow squeeze through winding lanes in the cramped yard.

Coordination—The Timken materials handling system hinges on coordination between production scheduling department and the materials handling staff. Production must balance with materials handling. It was not a simple matter of opening up new yards adjacent to the plant and spreading out the shipment stockpile.

Oyler Brothers, a trucking concern hauling a large part of Timken's steel, opened a terminal outside the steel mill and adjacent to the company's own classification yard. Steel billets and blooms, while still hot, are carried to the trucking lot by straddle trucks.

Timken fork lift trucks load the Oyler trucks and the steel rushes off—sometimes while still hot. Several clever loading techniques have been innovated. Bundles of steel bars, for example, are lifted by fork lift trucks with hooks attached to the bottom of the fork.

Advantages — Timken claims the following advantages for its streamlined system: (1) They are using the trucking company's space; (2) mill space is freed;

(3) speed of handling goes up while number of handlings for any specific order decreases.

The trucking firm finds it easier because: (1) Maneuvering in the



Handling Technique . . . hooks under forks of fork lift truck lift load to truck.

congested mill area has been eliminated; (2) trucks are loaded faster and more pay loads go out; (3) that extra trip from steel plant to truck terminal is done away with since the truck yard abuts the plant; and (4) coordination between mill and trucker is accentuated.

In the Timken classification yard (next to the trucking terminal), steel is stacked low and in such a way that orders can be filled quickly. Giant straddle trucks equipped with two-way radios prowl about the yard. A central radio control panel alerts

the truck operator and he can pick up the desired steel and bring it a short distance to the trucking yard for shipment.

Increase Output—Timken says its materials handling system permits an increase in production without increasing building space. Building space is traded for land space. Timken cautions that merely buying up land next to a plant to stockpile orders won't

turn the trick. A disciplined flow of material must result or else little is gained but more cluttered space.

The system went through the acid test when Timken's plant in Wooster, Ohio, 30 miles away, was operating on only a 2-hr inventory. Under the former method of materials handling, the Wooster plant would have surely shut down for lack of steel. But the present system was designed for speed. Wooster got its steel on time.

The emphasis, Timken says, is on flexibility, speed, and scheduling.

Financial

Rules Against Corporation Tax

A higher income tax on corporations than on individuals is unconstitutional, says the Sixth District Appellate Court of Ohio. The court issued a permanent injunction against Youngstown and adjoining Campbell, Ohio.

The order prohibits Youngstown from collecting a 1 pct tax on net profits of corporations and Campbell from collecting a .7 pct similar tax.

Youngstown had increased the tax on corporations to 1 pct without disturbing a 0.3 pct tax on individuals. Campbell had imposed the tax on corporations only, leaving it vulnerable.

The ruling sustained a permanent injunction granted by Youngstown Common Pleas Court in an action brought by Youngstown Sheet Metal & Tube Co., General Fireproofing Co., Republic Steel Corp., and U. S. Steel Co.

QUOTAS: Boost Some, Cut One

NPA raises tonnage ceilings for self-certification of steel and aluminum . . . Estimates 15,000 users will not have to file . . . Cuts zinc allowances in half . . . Sets deadlines for filing.

National Production Authority this week boosted the tonnage ceilings for self-certification of orders for steel, copper and aluminum but in another action reduced the tonnage ceilings for purchase of slab zinc without specific NPA approval.

Under revision of Directive 1 to Controlled Materials Plan Reg. 1, beginning with second quarter 1952, manufacturers of B products will not have to apply to NPA for allotments of controlled materials if their quarterly needs do not exceed the following:

Carbon steel, 30 tons; alloy steel, 8 tons; stainless, 1500 lb; copper and copper base alloy, 3000 lb; and aluminum, 2000 lb.

Present Quotas—Current and first quarter ceilings for self-certification are: Carbon steel, 5 tons; alloy steel, 1000 lb; stainless, none; copper and its alloys, 500 lb; and aluminum, 500 lb.

NPA estimates that thus boosting ceilings will remove about 15,000 small users from the necessity of filing application for allotments. Previously filed requirements will serve as a basis for NPA set-asides to meet self-certifications.

Deadline Set—At the same time, NPA has announced that the deadline for those who must file for second quarter allotments has been set at Dec. 22. And in still another move, a plan has been completed for diverting a large number of future applications to field offices for processing.

However, unless a manufacturer receives "written instructions" to the contrary, second quarter application forms should still be sent to Washington or the nearest Commerce Dept. field office, which ever made his most recent allot-

ment. All new applications should go to Washington.

Zinc Cut—Effective Jan. 1, an amendment to M-9 (zinc order) reduces from 20 to 10 tons the amount of slab zinc which can be purchased in any one month without an allocation certificate.

These applications must be filed not later than the fifteenth of any month for delivery the succeeding month.

Slab zinc producers who have not received orders for their monthly scheduled production by the tenth of the month are required to report the unsold production to NPA as of that date.

These changes, NPA says, provide the agency with means of closer screening. It is expected to reveal or make available an extra 750 tons a month for helping out small plants which are having a tough time keeping up production.

Rations for Freight Car Builders

Enough controlled materials will be allocated for first quarter freight car construction to build 21,200 units. This figure includes



"I've got to deliver this—the third change in specs in 2 days."

2000 tank cars and 1200 freight cars for export.

However, construction of 3200 units more during the 3-month period is authorized providing no additional NPA allocations are required to do it. NPA's railroad equipment division thinks it can be done "by using some materials from inventories and by conservation and substitution."

If the extra production can be managed, it would be restricted to 2700 freight cars for domestic use and 500 tank cars—no exports.

Fourth quarter allocations were scaled to a basis of 23,368 freight cars, 2500 tank cars, and 445 for export.

Farm Machinery Order Studied

Control officials are studying the need and advisability of drafting an order, similar to WPB P-153, which would set up priority ratings for distributors of repair parts for farm machinery and equipment.

Industry Controls This Week:

NPA Orders

CMP Reg. 1, Directive 1, Revised—increases tonnage ceilings for self-certification of steel, copper, and aluminum.

CMP Reg. 1, Amend.—Adds changes made necessary by 100 pct coverage of CMP. Major change is broadening of regulation to cover used and second quality materials.

M-9, Amend.—Reduces zinc tonnage permitted on self-certification.

M-90—Bans manufacture of color television sets.

OPS ORDERS

GCPR, Amend. 24 and CPR 22, Amend. 34—Sets new method for computing ceiling prices for new products.

CPR 22, Supplementary Reg. 2, Revision 1—Allows cost increases to be figured under GCPR.

CPR 22, Supplementary Reg. 18—Provides new way of computing Capehart amendment adjustments in ceiling prices for manufacturers with a net annual sales volume of no more than \$1,000,000.

CPR 83, Special Order 1, Sec. 2—Sets ceilings for passenger cars and equipment.

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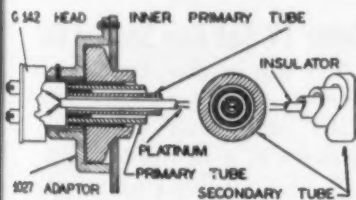
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into a complete thermocouple assembly is light in weight and permits easy replacement of new elements into a protecting tube assembly.

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Controls

Tool & Die:

Industry asks delivery guarantees, materials priority help.

The tool, die, jig and fixture industry has asked the National Production Authority to consider issuance of directives to assure delivery to the industry of jig borers and similar equipment.

Otherwise, the industry's advisory committee says, it will be impossible to meet mobilization demands. Their present backlog of orders now runs from 4 months to a year—largest in history.

Indication that some such action will be taken is evident from the fact that NPA warns demand will increase sharply over the next few months for large jigs, fixtures, and dies 15 ft or longer and 15 tons and over in weight.

Ask Priorities—The industry has also requested special priority ratings or equivalent assistance in obtaining raw materials at the warehouse level. Shortages of plate and cold rolled bars are particularly severe at the moment.

Going forward at Office of Price Stabilization, meanwhile, is the initial activity which may result in drafting of a specific price regulation for tool and die manufacturers. An industry subcommittee will be named to assist OPS in reviewing trade recommendations.

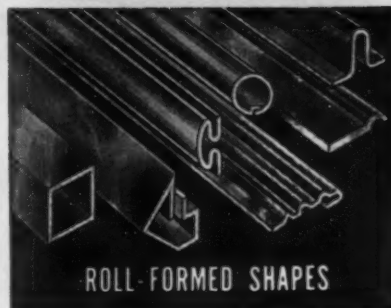
A majority of the industry group favored the use of current materials costs with a reduction in the customary markup in formulating a pricing regulation.

Easier Pricing for New Products

Ceilings for new-category products can be determined by a more flexible pricing method authorized by Office of Price Stabilization action effective on Nov. 26.

Amendment 24 to the General Ceiling Price Reg. and Amdt. 34 to CPR 22 allow a new-product manufacturer to compute a ceiling price based on the price charged by a competitor of the same class for the same item, or a substantially similar item, sold to the same class of purchaser.

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Controls

Prices:

Cost adjustments now under GCPR
rather than base period prices.

Businessmen pricing their products under Ceiling Price Reg. 22 now may determine increased-cost adjustments in terms of ceilings effective under the General Ceiling Price Reg., rather than base period prices.

In practice, this alternative method of computing ceiling prices works in the following way: the manufacturer calculates the average percentage increase over base period prices which he would be allowed under CPR 22, or Supplementary Reg. 17 to that order. Next, he notes the average percentage by which GCPR ceiling prices exceed base period prices.

Compares Differences—Comparing the two percentages thus obtained, he gets a percentage by which his GCPR ceiling prices may be raised or lowered, and thus learns his current ceiling prices. This alternative method may be applied to the entire product line of a business, or to a single category of products.

Terms of this optional method are described in Revision 1, SR 2, CPR 22, which became effective Nov. 26.

Color TV Set Ban Spelled Out

The ban on manufacture of color television sets for general sale was made official last week with the issuance of a new order, M-90.

It prohibits making not only of color sets as such but also attachments for conversion to color. Manufacture of color equipment for experimental, defense, hospital or instructional use is permitted.

Latex Sales Revert to Industry

General Services Administration soon will surrender exclusive rights to buy natural liquid latex rubber, but will continue in the rubber business.

No definitive date has been set for relinquishment of buying authority over latex. Jess Larson,

GSA Administrator, has said no date can be named until "an orderly liquidation of present stocks" is in progress.

Larson asserted that the decision to drop out of the latex-buying field is endorsed by importers who represent major producers and consumers of the material.

Job Stampers Await Scrap Ruling

Job stampers are awaiting an amendment to CMP Reg. 1 to clarify the status of scrap metal bought for fabricating. Washington has held it's still a controlled material and should be deducted from manufacturer's allotments. The trade disagrees.

Tonnage involved is not too great, but many manufacturers are interested. At the height of the steel shortage the market for "drop-offs," as the scrap is called in the stamping industry, was good. Recently it has fallen, primarily because there is no sure or reliable source.

Internal Combustion Quotas Set

Sufficient materials will be made available during first quarter 1952 for the production of upwards of 800,000 internal combustion engines.

This should be adequate, National Production Authority says, to take care of needs for trucks, power generation sets, agricultural needs, and pumps and power mowers.

However, industry continues to report difficulties in cashing tickets. Most replacement parts needs are being met, although there are serious shortages in crankshaft forgings and hot rolled bars.

Building Quota Deadline Dec. 15

Applicants for allotments of materials for second quarter construction and succeeding quarters must have filed Form CMP 4-C not later than Dec. 15.

National Production Authority explains that applicants who did not receive fourth quarter 1951 or first quarter 1952 allotments should reapply by filing CMP 4-C's for the second quarter.



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In a large gear department, cutting fluid tests were run on Gleason Revacycles cutting 8620 gear stock, 179 Brinell hardness.

	"X" Oil	Stuart's SPEEDKUT "A"
Gears Per Tool Grind.....	1200	3200
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There's a story! More production because of less downtime. Longer cutter life because of fewer grinds and less stock removal per grind. A lower *actual cost* for the cutting fluid.

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For high production... T-J Rivitors! Automatically feed and set solid rivets. Set 1/16" to 1/4" diam. solid steel rivets up to 7/8" long using electrically powered Rivitor... aluminum alloy rivets up to 1/4" diam. or steel rivets up to 1/8" diam. and up to 3/4" long, using air powered Rivitor. Throat depths, 8" to 36".

Speed up assembly in aircraft, farm machinery, automotive, stampings of all kinds... with T-J dependability! Write for Clinchor bulletin 847; Rivitor bulletins 646 and 847. The Tomkins-Johnson Company, Jackson, Michigan.

TWIN RIVITOR used for riveting flat steel springs to mounting brackets for automobile horns.

T-J RIVITOR used for automotive clutch plate assembly. Saves time and labor doing a four-fold job—assembly, setting, inspecting and ejecting.



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—Defense Contracts—

Contracts Reported Last Week

Including description, quantity, dollar value, contractor and address.

- Travelers, \$67,480, Lull Mfg. Co., Minneapolis.
- Control box, exceeds \$250,000, Electromatic Mfg. Co., New York.
- Receiver, transmitter, exceeds \$250,000, Federal Telephone & Radio, Clifton, N. J.
- Control group, AN/GRA-6, exceeds \$250,000, Garod Radio Corp., Brooklyn.
- Control group, AN/GRA-6, 2527 ea, exceeds \$250,000, Packard Bell Co., Los Angeles.
- Tube tester, 1-177, exceeds \$250,000, Supreme, Inc., Greenwood, Miss.
- Teletype parts, 225 ea, \$194,876, Teletype Corp., Chicago.
- Bracket, mount assy, 9760 ea, \$47,868, A. L. Freedman Co., Springfield, Mass.
- Base, mount, \$2387 ea, \$170,031, A. L. Freedman Co., Springfield, Mass.
- Turret Lathes, 19 ea, exceeds \$250,000, Giholt Mach. Co., Madison, Wis.
- Cal. 50 ammun. boxes, 555000 ea, exceeds \$250,000, Lonergan Mfg. Co., Albion, Mich.
- Vertical H.P. dial type milling mach, 7 ea, \$109,690, Cinn. Milling & Grinding, Cincinnati.
- Engine Lathes, 20, exceeds \$250,000, R. K. LeBlond Machine Tool Co., Cincinnati.
- Press Brakes, 24, exceeds \$250,000, Dreis and Krump Manufacturing Co., Chicago.
- Milling Machines, 181, exceeds \$250,000, Kearney and Trecker Corp., Milwaukee.
- Spare parts for exercise heads for torpedoes, \$250,000, American Machine & Foundry Co., New York.
- Dynamotors, 850 ea, 43,103, Pioneer Gen-E Motor Corp., Chicago.
- Fuze, PDM48A3, exceeds \$250,000, Bailey Products Corp., Union City, Ind.
- Knives, electricians, 100000, 60,700, Ulatr Knife Co., Inc., New York.
- Metal parts for Aircraft Catapult, 18830, exceeds \$250,000, Century Engineering Corp., Cedar Rapids, Iowa.
- Tractors, wheel type, exceeds \$250,000, R. G. LeTourneau Inc., Peoria, Ill.
- Ceilometer AN/GMQ-2, exceeds \$250,000, General Electric Co., Syracuse, N. Y.
- Conversion equip. kits, exceeds \$250,000, General Motors Corp., Cleveland.
- Sky Lookout supports, 250, \$148,075, Bettcher Manufacturing Co., Cleveland.
- Repair parts for elec. motors, generators & controllers, exceeds \$250,000, General Electric Co., Philadelphia.
- Repair parts for diesel engine, exceeds \$250,000, Detroit Diesel Engine Div., General Motors Corp., Detroit.
- Repair parts for drafting instruments, 70605, \$53,640, Universal Drafting Machine Corp., Cleveland.
- Repair parts for diesel engines, exceeds \$250,000, Cummins Engine Co., Inc., Columbus, Ohio.
- Bearings, roller thrust assy., 3 ea, \$162,400, Messinger Bearings, Inc., Philadelphia.
- Fuze, PD, M52A2, exceeds \$250,000, Precision Castings Co., Fayetteville, N. Y.
- Shell, HE, M48A1, 81MM, exceeds \$250,000, Fasco Industries, Inc., Rochester, N. Y.
- Fuze, PD, M52A2, exceeds \$250,000, Houde Engineering Div., Buffalo.
- Tank automotive spare parts, exceeds \$250,000, Westinghouse Electric Corp., Detroit.
- Spare parts, exceeds \$250,000, United Aircraft Corp., East Hartford, Conn.
- Maintenance spare parts, 1952 ea, \$175,117, United Aircraft Corp., Dallas.
- Radio Set, AN/GRR-5, exceeds \$250,000, Emerson Radio & Phonograph, New York.
- Mounting, exceeds \$250,000, JFD Mfg. Co., Inc., Brooklyn.
- Radiosonde Recorder, exceeds \$250,000, Leeds & Northrup Co., Philadelphia.

Control Group, AN/GRA-6, exceeds \$250,000, Remler Co., Ltd., San Francisco.

Receiver - Transmitter, exceeds \$250,000, Stewart Warner Elec. Corp., Chicago.

Generator, 717, \$100,595, Warwick Mfg. Corp., Chicago.

Heavy duty lathes, exceeds \$250,000, LeBlond Machine Tools Co., Cincinnati.

Spare parts for power plant, 97 items, \$68,559, International Harvester Co., Melrose Park, Ill.

Horizontal extrusion presses, exceeds \$250,000, Lowey Construction Co., New York.

Adding & subtracting machines, 200 ea, \$55,996, Victor Adding Machine Co., Dayton, Ohio.

Machinery & equip., exceeds \$250,000, Thompson Products Inc., Cleveland.

Machinery & equip., exceeds \$250,000, Dana Corp., Gear Specialty Div., Toledo.

Machinery & equip., exceeds \$250,000, New Hampshire Ball Bearings, Inc., Peterborough, N. H.

Miscellaneous spares for C-47 & C-54, exceeds \$250,000, Canadian Commercial Corp., Montreal, Canada.

Multi-frequency transmitter, exceeds \$250,000, Wilcox Electric Co., Kansas City.

Wheel assys., & brake assys., exceeds \$250,000, B. F. Goodrich Co., Dayton.

Oxygen generator sets, exceeds \$250,000, Air Products Inc., Allentown, Pa.

Accelerometers, aircraft, exceeds \$250,000, Eclipse-Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.

Miscellaneous parts, \$100,000, Bendix Products Div., Bendix Aviation Corp., South Bend, Indiana.

Assys., sub-assys. and component parts of engine instrument, \$140,000, General Electric Co., Schenectady.

Wheel & brake assys., exceeds \$250,000, B. F. Goodrich Co., Dayton.

Tire Chain, exceeds \$250,000, Cambell Chain Co., West Burlington, Iowa.

Replenishment of Tank & Combat Vehicle Parts, exceeds \$250,000, Milwaukee Gear Co., Milwaukee.

Government Inviting Bids

Latest proposed Federal procurements, listed by item, quantity, invitation, No. or proposal, and opening date. (Invitations for Bids numbers are followed by "B," requests for proposals or quotations by "Q").

Body, engine junction box, 255 ea, 52-58-B, Dec. 14.

Cover, engine junction box, 255 ea, 52-58-B, Dec. 14.

Spare parts used in connection with Apparatus Decon., var, (CML-11-021-52-20B), Nov. 30.

Bearing, tire pump connecting rod assy. 700, 52-547B, Dec. 14.

Bearing, set, 1800, 52-547B, Dec. 14.

Pipe, tail, engine exhaust, 18260, 52-546B, Dec. 17.

Compressor, air, 75, 52-696B, Dec. 14.

Support, clutch shaft, 48, 52-701B, Dec. 13.

Support, winch cable tray, 175, 52-701B, Dec. 13.

Support, winch, sheave, 159, 52-701B, Dec. 13.

Bracket, body, cab mirror, 420, 52-701B, Dec. 13.

Bracket, clutch, throwout, 132, 52-701B, Dec. 13.

Bracket, transfer case frame, 213, 52-701B, Dec. 13.

Bracket, frt., spring, rear, 474, 52-701B, Dec. 13.

Bracket, frt., pintle hook support, 27, 52-701B, Dec. 13.

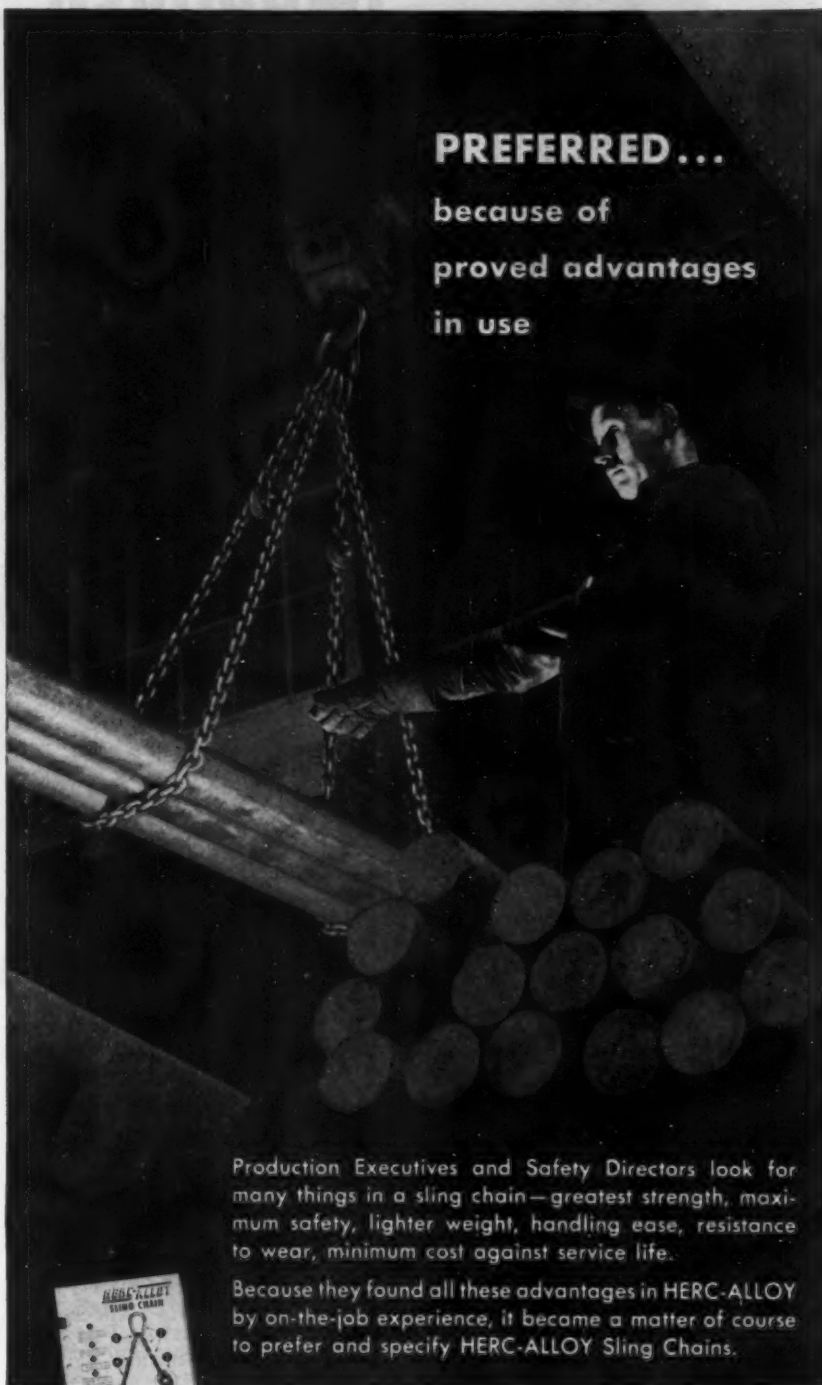
Turn Page

HERC-ALLOY

SLING CHAINS

PREFERRED...

because of
proved advantages
in use



Production Executives and Safety Directors look for many things in a sling chain—greatest strength, maximum safety, lighter weight, handling ease, resistance to wear, minimum cost against service life.

Because they found all these advantages in HERC-ALLOY by on-the-job experience, it became a matter of course to prefer and specify HERC-ALLOY Sling Chains.



Write for illustrated Data Book No. 3 which contains helpful information on sling chain selection and use.

COLUMBUS McKINNON CHAIN CORPORATION

(Affiliated with Chishalm-Moore Hoist Corp.)

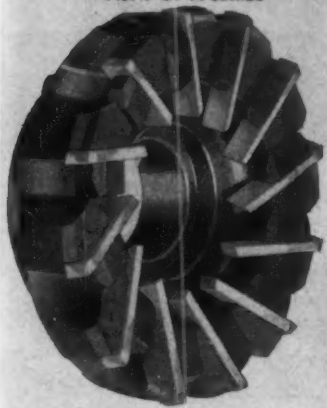
GENERAL OFFICES AND FACTORIES: TONAWANDA, N. Y.

District Offices: New York • Chicago • Cleveland

Other Factories at Angola, N. Y., Dixon, Ill., St. Catharines, Ont., Can., and Johannesburg, South Africa.

Tool Saving Tips

No. 5 OF A SERIES



"KF" radial type Kennamill has solid Kennametal blades. For production jobs on steel, and heavy cuts on cast iron. Standard sizes 6", 8", 10", and 12".

"MF" for CAST IRON

"MF" axial type Kennamill has solid Kennametal blades—more per inch of cutter diameter than the "KF"—for high production runs on cast iron. Standard sizes 6", 8", 10", and 12".

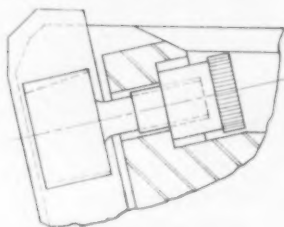
Use These
NEW

IMPROVED Inserted Solid Blade KENNAMILLS

"KF" for STEEL
and Heavy Cast Iron Milling



Simplify SET UP, DISMANTLING, MAINTENANCE



NEW! ONE PIECE WEDGE AND SCREW

The shank of the stud-type, heat-treated alloy steel wedge extends through the cutter body. The wedge is pulled down, and blade secured, by turning the Allenut—easily accessible at the back of the cutter.

• These precision-built cutters feature strong, long-lasting, solid Kennametal blades—positioned, supported, and wedged by a new, improved design that assures maximum milling service from each unit of carbide consumed. (See sketch at left.) No threads in the cutter body; possibility of "freezing" eliminated.

Blades can be precision set. Wedges and blades for all sizes of each type cutter are interchangeable. For complete particulars, see Catalog 51, and Supplement 2.



KENNAMETAL Inc., Latrobe, Pa.

MANUFACTURERS OF SUPERIOR CEMENTED CARBIDES
AND CUTTING TOOLS THAT INCREASE PRODUCTIVITY

Controls

- Pan, cab, frt., auxiliary seat, 88, 52-701B, Dec. 13.
- Shaft, clutch and brake winch, 66, 52-701B, Dec. 13.
- Guide and bracket assy, 175, 52-701B, Dec. 13.
- Base, engine, oil filter assy, 52-654B, Dec. 13.
- Wheel, steering assy, 10000, 52-712B, Dec. 26.
- Body, truck, cargo, 370 ea, A-83Q, Nov. 28.
- Pilers, angle head, 6730, 1907-Q, Dec. 13.
- Wrenches, adjustable, 8570, 1868-Q, Dec. 13.
- Pilers body and fender, 94885, 1868-Q, Dec. 13.
- Prensers, seal, 320, 1868-Q, Dec. 13.
- Pliers, angle nose, 23300, 1905-Q, Dec. 13.
- Wheels, warehouse, trailer, var, 52-143, Dec. 13.
- Motors, electrical, 55, C-3172, Dec. 3.
- Actuators, linear, 6, C-3179, Dec. 7.
- Railway car, maintenance, gasoline, 79 ea, 31B, Dec. 14.
- Railway car, maintenance, 167 ea, 31B, Dec. 14.
- "B" siren, 134 ea, (YDSO-1027-52), Dec. 18.
- Parts for carbine, caliber 30, M1, Clal, M2 and M3, SNL B28 bolt, assy, dwg C-7162597.
- Option I, 225000 ea, 52-88B, Dec. 3.
- Option II, 180000 ea, 52-88B, Dec. 3.
- Option III, 135000 ea, 52-88B, Dec. 3.
- Option IV, 90000 ea, 52-88B, Dec. 3.
- Option V, 45000 ea, 52-88B, Dec. 3.
- Switch, multipole, 600 ea, PR-208/52, Dec. 14.
- Laundry, mobile, two trailer type, 39 ea, 52-559B, Nov. 26.
- Photographic equip, 165 ea, 52-247B, Dec. 4.
- Cylinder assy, 740 ea, 52-346B, Dec. 5.

Universal Match to Make Bombs

Pyrotechnic aerial bombs will be made for the Army, beginning in February, at Longhorn Ordnance Works, Marshall, Tex., by Universal Match Co. of St. Louis.

Rehabilitation of the World War II TNT plant is now in progress. About 100 production workers will be employed to start limited production in February or March. By midsummer, when work on the \$5,000,000 contract is in full swing, the work force may total 500.

The 1-year contract, which can be renewed, was let by the Ordnance Ammunition Center, Joliet, Ill.

Turbine Orders for AiResearch

Navy Bureau of Aeronautics has awarded a \$36 million contract for small gas turbines to The Garrett Corp.'s AiResearch Manufacturing Co. Div. Company officials believe it to be the largest military contract of its type yet to be let.

Contract calls for auxiliary gas turbine engines, air turbine starters and control valves for seven types of Navy turbojet and turbo-prop planes. Gas turbine powered systems will supply selfstarting power for the planes.

BRITAIN: Boosts Steel Capacity

Industry expands potential . . . Conservative Party plans denationalization by repealing Iron and Steel Act . . . Raw material supply crucial . . . Coke, iron ore great needs.

Britain will boost its pig iron capacity by 560,000 tons during the remainder of this year and in 1952 to meet defense needs. New blast furnaces and additional ore treating and handling facilities will raise annual pig capacity to an estimated 12,320,000 tons in 1952. Steel production will be raised to 18,480,000 tons, providing adequate supplies of raw materials can be maintained.

Latest figures, however, indicate clearly that the target of 16,000,000 tons will not be reached this year. Actual output for the first 10 months has been a little over 13,000,000 tons. Strikes and shortages leave little chance of making up the needed 3,000,000 tons in the 2 months remaining.

Another important but unpredictable factor is the Conservative Government's recent action freezing the industry in its current status. Idea is to forestall any changes which would make denationalization more difficult. Details of plans for returning the industry to private ownership — a major Conservative goal — have not yet been announced.

But the intention had formed a plank of the Conservative's election platform.

No More Socialism—The manifesto said: "We shall stop all further nationalization. The Iron and Steel Act will be repealed and the steel industry allowed to resume its achievements of the war and post-war years. To supervise prices and development we shall revive, if necessary with added powers, the former Iron and Steel Board representing the State, the management, labor and consumers."

Coal and publicly-owned transportation will remain nationalized under the Conservatives' plan. Private trucking firms, however, will

be allowed to return to capitalism.

Meanwhile, industry is doing all it can to secure additional supplies, but many factors are beyond its control. Greatest needs are for iron ore and coke. Programs for increasing supplies of both domestic and imported ore are under way, but some of these are necessarily long-term projects. Ore for 1952 will come mainly from already established sources, especially Sweden and North Africa.

Coal the Clue—Procurement of sufficient iron ore will be largely dependent on an adequate coal

supply. This must be large enough both to keep shipping moving and to supply Britain's traditional customers. This is particularly important since ore-producing countries tend to exchange their ore for coal.

Reduce Tinplate Export Quotas

Tinplate exports for first quarter 1952 will be reduced by 10,000 tons to a total quota of 115,000 tons of primes and seconds. Cut is partly because of domestic shortages and partly because of increased production in other countries.

Licenses will be issued for 99,000 tons for food packing and 16,000 tons for packaging of petroleum. In addition, Office of International Trade may license 9000 tons of unmended menders and 12,500 tons of waste tinplate and terneplate.

Acceleration



Where speed in plant expansion is essential at no sacrifice in total efficiency, Ingalls offers convenient one-source assistance on any steel fabricating project. Paper, textile and sugar mills, assembly plants, factories—if fabricated steel or tanks are required, if speed is of the essence, Ingalls' capacity to complete difficult and unusual jobs on schedule is at your command.

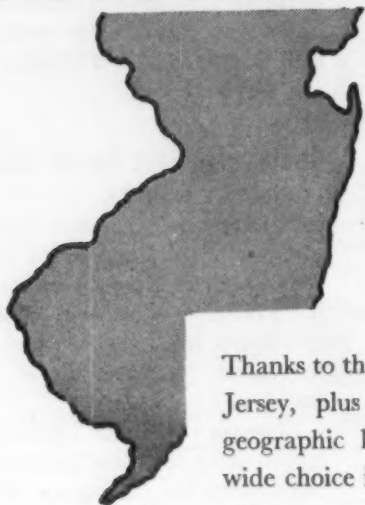
The Ingalls Iron Works Company

BIRMINGHAM, ALABAMA

SALES OFFICES: NEW YORK, CHICAGO, PITTSBURGH

the
CROSSROADS
of the EAST

A GOOD PLACE TO



LIVE
WORK
AND
PLAY

Thanks to the diversified development of New Jersey, plus its fortunate topography and geographic location, this state offers you a wide choice in living and working conditions.

Here at the Crossroads are busy cities and quiet, country villages; here are bustling industrial areas, located on trunk-line railroads.

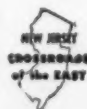
Forty per cent of New Jersey is farmland, providing the highest dollar value per acre in the nation, one of the reasons why it is called "The Garden State". Yet, many areas of the state are highly integrated urban centers, related directly with surrounding suburban communities.

In every respect, New Jersey is a good place to live . . . to work . . . to play.



Write for your copy of the new digest about New Jersey, "An Industrialist's View of the Crossroads of the East," Box F, Public Service, 70 Park Place, Newark, N. J.

**PUBLIC SERVICE
ELECTRIC AND GAS COMPANY**
NEWARK, N. J.



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From the newest developments in metalworking equipment featured
EACH WEEK in the ADVERTISING PAGES of the

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The Iron Age

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NEW YORK 17, N. Y.

A CHILTON PUBLICATION

Construction

Steel Inquiries and Awards

Fabricated Steel Awards this week include the following:

1300 Tons, Pueblo, Colo., C. F. and Seamless Tube Mill, to Allied Structural Steel Co.

621 Tons, Boston, furnishing, fabricating and erecting steel work bridges forming traffic interchange near Longfellow Bridge, Charles River Reservation, Munroe Lamstroth Inc., North Attleboro, Mass., low bidder.

545 Tons, Linton, Ind., General Electric Co., to International Steel Co.

Fabricated Steel Inquiries this week include the following:

10,000 Tons, Colorado Springs, Colo., Water Line.

9000 Tons, Will County, Ill., Public Service Co. of Northern Ill., general plant units 1 and 2.

Reinforcing Bar Awards this week include the following:

100 Tons, Boston, furnishing fabricating and erecting steel work bridges forming traffic interchange near Longfellow Bridge, Charles River Reservation, Munroe Lamstroth Inc., North Attleboro, Mass., low bidder.

Reinforcing Bar Inquiries this week include the following:

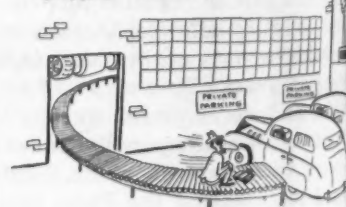
100 Tons, Love's Park, Ill., Joists, High School.

Building Volume Continues Dip

Construction contract dollar volume continued its downward trend in September, according to F. W. Dodge Corp. figures. Defense limitations cut building 16 pct from August totals to \$1,082,855,000. This was 16 pct below Sept., 1950.

Nine-month total was \$12,533,605,000, 13 pct more than last year's comparable figure. Non-residential awards were \$404,462,000, 15 pct below August and 16 pct below Sept., 1950. Residential contracts were 15 pct less than the previous month at \$479,716,000, 13 pct below last year. Public and private works and utilities were \$198,677,000, down 9 pct from August and 17 pct under the same month last year.

JONES MACHINERY COMPANY



"That new boss is certainly keen on materials handling."

THE IRON AGE

This Week in Washington

Plan Probe of Subcontract Set-Offs

Government against system permitting prime contractors to withhold payment to subcontractors for debts . . . Monopoly, tax activity due . . . Plan study of mergers—By G. W. Baker.

A thorough raking-over is in store for the subcontracting set-off system, as practiced by many prime contractors handling government orders, at a meeting tentatively scheduled for Dec. 3. It will be presided over by Richard C. Dyas, acting chief of the Credit Div., Small Defense Plants Administration.

Representatives of a number of large federal agencies are expected to make recommendations on use or abandonment of the system, which allows prime contractors to withhold payments on subcontracts as a means of recovering debts or claims.

"Remedial action" on this practice has been advocated strongly by SDP Administrator Telford Taylor. In a letter to the heads of nine agencies with procurement functions, Taylor said the set-off system "seriously impairs the value of a subcontract for collateral purposes and consequently the ability of the subcontractor to obtain either public or private loans."

Many Against It — The letter indicated that the American Bankers Assn. and W. Stuart Symington, head of Reconstruction Finance Corporation, believe set-off activities should be scrapped. Also backing him up, Taylor said, is the Defense Dept.

According to the SDPA head, "There's general agreement among government officials that steps should be taken to eliminate the set-off system."

Turning to the industry angle, he asserted that several important aircraft manufacturers appear willing to agree with him and

have done away with general set-off language in subcontracts.

Invited to attend the conference with Dyas were personnel from the Interior, Commerce, Agriculture, and Defense Depts., Defense Production Administration, Federal Reserve Board, General Services Administration, Defense Materials Procurement Agency, and Atomic Energy Commission. It appears most, if not all, of these will be represented at the session.

Block That Merger!—Look for a rash of anti-monopoly activity to break out again, with the Federal Trade Commission probing into mergers effected over the past year. The reason is that Chairman James M. Mead believes that there is "another great wave of mergers" under way.

After a long fight, the FTC finally got authority from Congress to throw road-blocks in the way of corporations acquiring physical

assets of another. It already had this power with respect to stock acquisition. Combined, the two provide an effective weapon against mergers opposed by the FTC.

Lost Enthusiasm?—It is indicated that the agency chairman suspects that its trust-busters have not been as zealous in exercising the additional authority, now a year old, as they might have done. At any rate, staff members have been called into "conference" and told to get busy—to "proceed promptly" with the job.

Study all mergers since last Dec. 29, they were instructed, and "if there appears to be a violation of the law" the matter is to be reported promptly with recommendations. Commission action would be swift, it was indicated.

Tax Issue—Taxation and deficit spending is increasingly shaping up as a major issue in Congress over the coming months. It is no secret that much time and thought are being devoted at the winter White House to next year's budget and new tax demands. In the capitol, administration fiscal experts are studying reports by other governmental agencies of increased dollar volume of corporation net income as one basis for sharpened pencils.

Outcome of new tax proposals is dubious. Already unhappy over last year's slash in tax proposals, advocates of new and bigger taxes are becoming even less happy over the apparent attitude of the Senate Finance Committee. Attitudes of Chairman George D. of Ga., and Sen. Byrd, D. of Va., toward deficit spending, economy and taxes are well known. And Sen. Johnson, D. of Colo., has ventured to the edge of a forecast: "It would be a great surprise to me if any kind of a bill (imposing new taxes) is approved by the Senate committee next year."

Turn Page



BACK-UP ROLL NECKS RUN SMOOTHER

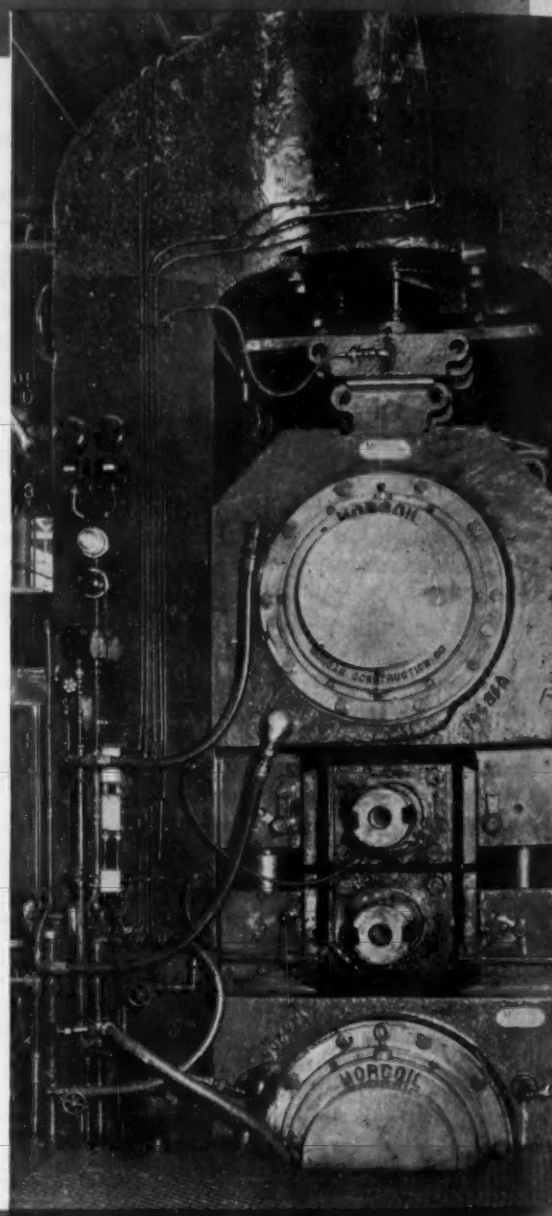
... when protected against friction, heavy loads and high temper- atures with **TEXACO REGAL OILS**

To assure tough, friction-fighting oil films for back-up roll necks, lubricate with *Texaco Regal Oils*. These heavy-duty turbine-grade oils keep circulating systems clean . . . assure a constant flow of cool, clean lubricant to the bearings. You get trouble-free performance, longer bearing life and lower maintenance costs.

Texaco Regal Oils resist oxidation, emulsification and sludging . . . carry heavy loads. Switch to *Texaco Regal Oils* and join operators everywhere who enjoy the greater efficiency and economy assured by these great oils.

On the drive side, protect heavy-duty enclosed reduction gears with *Texaco Meropa Lubricants*. These *extreme pressure* lubricants resist oxidation, thickening and foaming . . . assure longer gear and bearing life . . . lower maintenance costs.

A Texaco Lubrication Engineer will gladly help you improve performance and reduce costs throughout your mill. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.



TEXACO Regal Oils

(HEAVY CIRCULATING OILS)

BARTER: Canada to U. S. to U. K.

Britain to swap Canadian aluminum for our steel . . . Also gets extra German scrap . . . Both ingots and steel products involved . . . We will repay aluminum when output permits.

A 3-way swapping deal has been completed by Defense Production Administration by which the United States will receive aluminum from Canada in exchange for steel from Britain.

Under the agreement, 11,000 tons of aluminum produced in Canada over the next 5 months and intended for Britain will be instead shipped to the U. S.

In exchange, the U. S. will allot England some 25,000 tons of steel products and 46,000 tons of premium price steel for first quarter 1952. Some 28,500 tons of German steel scrap will also be sent to England instead of here.

Nearer Needs—Britain has been appealing for a great deal more steel, asking in terms of hundreds of thousands of tons. Originally only about 30,000 tons had been earmarked for the first quarter. Barter deal has boosted the figure to 16,000 tons.

Eventually, the aluminum to be received from Canada will be re-shipped to England. But not until most of the planned new production in this country has become a reality. Present plans are to begin shipping aluminum to England about fourth quarter 1952 at a rate of about 3600 tons per quarter.

Finished steel products to be furnished will go mainly for military assistance in the form of electrical sheet, rounds, wide cold-rolled sheet, and so on. Ingot shipments will be mostly high cost conversion steel which is in less demand here.

Barter Deals—If the recently completed barter deal of steel-for-aluminum works successfully, the Defense Production Administration can be expected to try to broaden the scope of such negotia-

tions to trade materials for metals.

The United States is in a tight spot with respect to such scarce materials as copper, tin, lead, zinc and others — all of which are needed now. DPA Chief Fleischmann is even now exploring the possibilities of swapping deals for these materials with other Atlantic Pact nations.

Foundries:

Need more workers in spite of rise in employment since 1949.

A continuation in the upward trend of employment in iron and steel foundries is predicted by the Bureau of Employment Security, U. S. Dept. of Labor.

Stimulating this climb, begun in 1949, is the growth of new defense industry, according to an analysis made by the bureau. In December, 1950, for example, employment was 36 pct above the low registered in November, 1949. By April of this year, foundry workers numbered 282,600, and in June

a seasonal peak of 284,700 was recorded.

In August, all segments of the industry told of needing new workers. Gray iron establishments wanted 3100 workers by December and a total of 3500 by February. Malleable iron plants estimated a need for 1500 by February. Steel foundries said they could use 2300 additional employees by February.

DPA Tax Pre-Approval Postponed

Defense Production Administration has postponed until Jan. 1 its plan for making pre-certification a requirement for issuance of tax amortization certificates.

It had been announced when the moratorium was lifted, that no certificates would be issued without DPA approval. This was to have been based on the agency's satisfaction that there was a shortage of facilities, that the product was essential, and that expansion plans followed the government's ideas on dispersal.

Production, Not Policies—DPA Chief Fleischmann has advised Office of Defense Mobilization that getting needed expansion facilities under way is more important than attempting to get new policies into effect.

Construction started between now and Jan. 1 will still be eligible for tax amortization, provided applications are filed within 6 months after work starts.

New OPS Hard Goods Chief

Maitland Lee Griggs of Ardsley-on-Hudson, N. Y., is the new director of Consumer Durable Goods Div., Office of Price Stabilization. The division deals with appliances and equipment, housewares and accessories, and home furnishings.

Griggs, a New York native, is a director and former vice-president of Alexander Smith, Inc., manufacturers of floor coverings. He succeeds Ernest W. Heilmann, who has resigned to return to his job with A. G. Spaulding & Bros.



MR. SECRETARY: E. V. Huggins, executive vice-president, Westinghouse Electric International Co., who has been named assistant secretary of the Air Force.

Industrial Briefs

Sales Office — PITTSBURGH — DES MOINES STEEL CO. has opened an eastern sales office at 1060 Broadway, Newark, N. J., replacing the New York office formerly located at 270 Broadway.

New Boilers — RUST ENGINEERING CO. will construct two new boilers at the Midland, Pa., plant of Crucible Steel Co. The \$1.2 million project calls for replacement of six old boilers with Babcock & Wilcox steam generators with rated capacity of 75,000 lb per hr at 250 psi.

Shipyards Busy —Shipyards on inland waterways are working at top speed on 71 diesel tugboats and two towboats for operation on inland waterways and harbors. Boats average 1820 hp per vessel. In addition, 35 yards are building 42 1200-hp tugs and 38 of 600 hp under NAVY BUREAU OF SHIPS contracts, plus 50 smaller tugs for the armed forces.

Building Decline Seen —Dollar volume of construction in 37 eastern states will run 10 pct less in 1952 than in 1951, according to F. W. DODGE CORP. Expected declines by type are: Nonresidential, 6 pct; residential, 16 pct; public and private works and utilities, 4 pct. Privately owned utilities, the only exception, are marked for a 31 pct gain.

Ammunition Plant — RHEEM MFG. CO., will operate for the Army an artillery ammunition plant at Burlington, N. J. To be known as Burlington Ordnance Plant, the facility will be housed in a World War II aluminum products factory, which has been used recently for storage purposes. Rehabilitation of the factory will be started immediately.

Will Build — SOUTHERN STATES ROOFING CO. will build a new metal fabricating plant at Memphis, Tenn., and will turn out a line of sheet metal products, ranging from fence posts to prefabricated housing products. Cost of the new plant was not announced.

New Address — AJAX ELECTRIC MOTORS CORP. is now located in their own building at 1138 Mt. Hope Ave., Rochester, N. Y.

Licensed — INDIANA METAL PRODUCTS CORP., Rochester, Ind., has been licensed to manufacture and sell Shakeproof Thread Cutting Screw Types Nos. 1, 23, 25. It is in full production on all sizes of these fasteners, which are furnished in Phillips, Clutch, Slotted and Hex Head.

ASME President —Reginald J. S. Pigott, director of the engineering division of GULF RESEARCH & DEVELOPMENT CO., was elected president of The American Society of Mechanical Engineers for 1952, at the society's 72nd annual meeting in Atlantic City.

Tank Program —A contract designed to make available added facilities for the manufacture of a special type of tubing used in making tank treads, has been negotiated between BABCOCK & WILCOX TUBE CO., Beaver Falls, Pa., and the Ordnance Corps, Department of the Army. The contract calls for additional installation of just under a million dollars in new equipment. The added facilities will be leased from the Government.



MAKE TRACKS: Rubber tank tracks for M-24 light tanks come off production line at B. F. Goodrich Co. First shipment of tracks has already started overseas.

Canadian Contact —Canadian business of the American Air Filter Co., Inc. after January 1, 1952, will be handled by AMERICAN AIR FILTER CO. CANADA, LTD., Montreal, P. Q. William G. Hole will be in charge of all Canadian operations.

Building Completed —A new 56,000 sq-ft manufacturing building to be devoted exclusively to "small, miscellaneous transmission parts" for FULLER MFG. CO., Kalamazoo, Mich., has been completed. Production lines in the new plant first went into operation Sept.

Visitors —Three hundred of Western Europe's top industrialists representing the steel, automotive, engineering, food, building and other industries arrived in New York recently to take part in the International Management Productivity Mission sponsored by the Economic Cooperation Administration. The delegates will be divided into approximately 25 different groups and will visit key United States plants.

Expands Facilities —HARCRAFT BRASS, a division of Harvey Machine Co., Inc., have completed their new 2½-acre factory adjacent to the present plant of over 10 acres. The new plant houses the expanded facilities for the production of the Harcraft line of chrome brass valves and fixtures.

Leases Space —CONVAIR GUIDED MISSILE DIVISION has leased 79,000 sq ft of building space at the Los Angeles County Fairgrounds to provide interim facilities for engineering, experimental shop and laboratory activities in Pomona.

Construction to Start —HOTPOINT INC., Chicago, has acquired a 400-acre tract of land on the outskirts of the city for the purpose of building a \$20 million manufacturing plant. Construction will start as soon as defense restrictions on construction will permit.

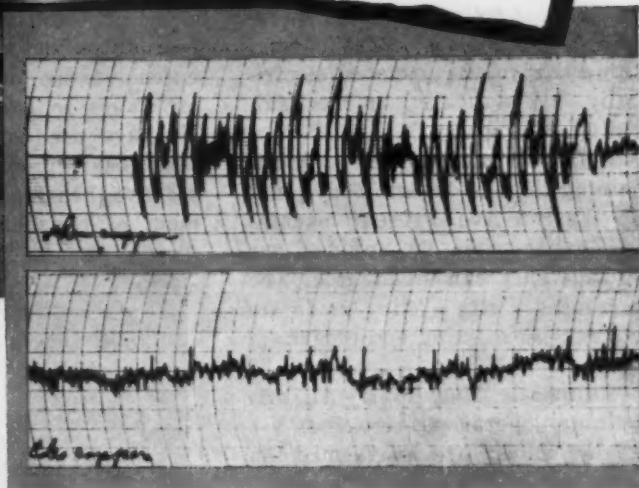
A Purchase —FOOD MACHINERY & CHEMICAL CORP. has acquired Simplex Packaging Machinery, Inc., Oakland, Calif. Final purchase agreements were completed on October 15 with price details undisclosed.

Here before
your eyes is
PROOF
of fine
REVERE
COPPER



Diamond surfacing machine in the Edes plant, producing a perfect surface on a Revere Copper Sheet.

Charts showing typical surfaces. Top, ordinary copper plate. Bottom, a diamond-finished Edes plate. It takes fine copper to produce this result.



One of the country's best-known suppliers of copper plates for photoengraving is The Edes Manufacturing Company, Plymouth, Mass. Edes has developed a patented process that is unique for giving plates the final polish. They are surfaced with diamond cutters, specially cut and ground. The plates thus produced and shipped to photoengravers have an accuracy of plus or minus .00025 inch, practically dead flat and true to gauge at any point within these limits. Obviously, only exceptional copper will do.

Making copper sheets for this service is an exacting process. The metal as supplied by Revere must be specially handled in the mill to make sure there are neither surface nor imbedded imperfections, since a pin-point defect in the finished plate will show in printing.

Revere has always taken a deep interest in the graphic arts, not only because the industry is a good market for

copper, but also because Paul Revere himself was a skilled engraver on copper. Thus it is likely that the original plates for this advertisement were of Revere Copper, and also many of the plates used by the magazines you read. In addition, Revere supplies copper rolls for rotogravure, the comics, and for textile printing. For fine copper for graphic processes, consult Revere.

REVERE *150th YEAR OF SERVICE TO AMERICA*
COPPER AND BRASS INCORPORATED
Founded by Paul Revere in 1801
230 Park Avenue, New York 17, N. Y.

Mills: Baltimore, Md.; Chicago and Clinton, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Rome, N. Y. — Sales Offices in Principal Cities, Distributors Everywhere

SEE "MEET THE PRESS" ON NBC TELEVISION EVERY SUNDAY

November 29, 1951

The Automotive Assembly Line

Push Button Plants Come of Age

New DeSoto plant features automatic operation . . . Transfer machines handle complete machining . . . New quality control devices cut spoilage and fatigue failure—By W. G. Patton.

The automobile industry now has two ultra modern "push button" engine plants—Oldsmobile and DeSoto.

Last week DeSoto opened its new Warren Ave., Dearborn, engine plant to the press and a few special guests. Planned from the ground up to use the finest automatic equipment and the latest processing methods, the new plant is the most fully automatic operation in the industry today. Everything that moves is moved electrically, hydraulically, or mechanically.

Plant occupies 328,229 sq ft adjoining the new DeSoto body plant on Warren Ave. Present machining capacity is 60 engines per hr but this can undoubtedly be increased with only moderate changes in existing equipment.

Automatic Machining—All machining operations on the V-8 engine block are performed on transfer machinery. The new DeSoto transfer machines average 84 ft in length. Milling, drilling, reaming, boring, tapping and similar operations on the block are performed usually by multiple heads which often have several working tools.

In addition to the block, there are transfer machines for the intake manifold, bearing caps, cylinder heads and the chain case cover. A single transfer machine for the intake manifold performs all but one of the machining, drilling, milling, spot facing and tapping operations required for the part. On another machine 96 operations on the chain case cover are performed by 34 stations.

An unusual feature of the new DeSoto equipment is the insertion of stations into the line where plug gages check, for example, not the size of a hole, but whether or not an operation has been performed. This is done to eliminate the possibility of jamming the machine. Blocks are turned frequently to remove chips and improve accuracy in locating.

Quality Control—Plant makes extensive use of the latest type air gages to control quality. An air gage used on the crankshaft main bearing checks the size of all five bearings and the alignment of the bearings simultane-

ously. Similar gages are used on the main bearing journals, camshaft, piston and connecting rods.

One of the most unusual machines is the automatic crankshaft balancing machine. The operator loads the crankshaft in a fixture and the machine indicates if drilling is needed. Part is transferred to the drilling machine which removes the correct amount of material, then moves to a second balancer where it is again tested. If further drilling is necessary this operation is also performed automatically.

Other new machines weigh pistons and connecting rods and automatically mill enough material to equalize the weight of all the pistons and connecting rods used. Pistons are precision fitted for size. Both the crankshaft and the coupling are dynamically balanced.

Less Damage—DeSoto is shortening its crankshafts. This minimizes the possibility of fatigue failures from tool marks. Intake manifolds are also blasted to remove burrs and tool marks.

Some conveyer hooks have been dipped in rubber to eliminate scratching the parts. A unique conveyer automatically picks up the cylinder blocks and deposits them, also automatically, in another section of the plant.

Floors throughout the plant are surfaced with emerycrete, a substance much harder and more durable than concrete, to minimize the possibility of pitting. Machines used in the new DeSoto plant were furnished by 88 machine tool manufacturers located in 12 different states.

Copper-Clad—At the present time, copper-clad steel looks like the best bet to replace the copper being used in radiators. A new source of copper-clad steel is expected to be announced soon. Ra-



NEW PLANT: Final assembly line in DeSoto's new V-8 engine plant. Engines are mounted on movable metal plates so they may be swung into proper working positions.

radiators built of copper-clad steel are now in limited production and extensive tests are being made. No car manufacturer has actually approved copper-clad radiators but the outlook is good, according to reliable trade sources.

Fuselage Contract—Briggs Mfg. Co. has a new contract for production of large fuselage sections for Boeing's six-jet medium bomber. Work will start in December at a new plant now nearing completion on Mound Road.

Crankshafts Still a Headache

While copper is generally presented as the villain in the automobile production picture, crankshafts continue to be one of the industry's greatest headaches. Extensive conversion arrangements have been set up to supply forging billets.

The supply of crankshafts has been touch-and-go for several months. A number of suppliers have fallen far behind in deliveries. Despite reports of an easing steel situation—many of them exaggerated—the bar steel supply line is still seriously threatened.

Ford Plans Detroit Expansion

Ford's answer to a suit by Local 600 of United Automobile Workers was to announce that its Detroit defense program will eventually exceed \$600 million per year. Union has charged the company with decentralizing its operations.

In the Detroit metropolitan area, Ford is expanding its production facilities at Lavonia, Wayne and Ypsilanti. This is augmented by expenditures exceeding \$100 million at the Rouge. Ford's steel expansion program will increase the company's finishing capacity by 190,000 tons.

In the Detroit area Ford employment is down from 80,000 to 69,100 but in three new plants alone the company says it will ultimately employ 13,500 defense workers.

The Ford statement released in

Massachusetts last week shows assets of \$1,469,091,000. This is an increase of \$125,742,000 over the previous report. Inventories were listed at \$278,948,000.

Ford files its report annually in Massachusetts to comply with requirements of the Office of the State Tax Commissioner.

Public Relations for GM Dealers

General Motors has launched a new program in dealer public relations. A booklet has been prepared showing step-by-step procedures for dealers anxious to improve their customer and community relations. Each GM division will supplement the booklet with programs designed for its own dealers.

Booklet urges GM dealers to take an active interest in community affairs. GM material available to dealers includes films on safe driving and other subjects.

and literature available for public distribution are listed in the booklet. Program was introduced by W. F. Hufstader, vice-president in charge of GM distribution.

Hudson Has New B-47 Contract

Hudson Motor Co. has announced its fourth aircraft assignment. The company will manufacture forward sections of the fuselage of the B-47 Stratojet. This is the second B-47 contract announced by Hudson during the past month.

New Tank Contract for Chevrolet

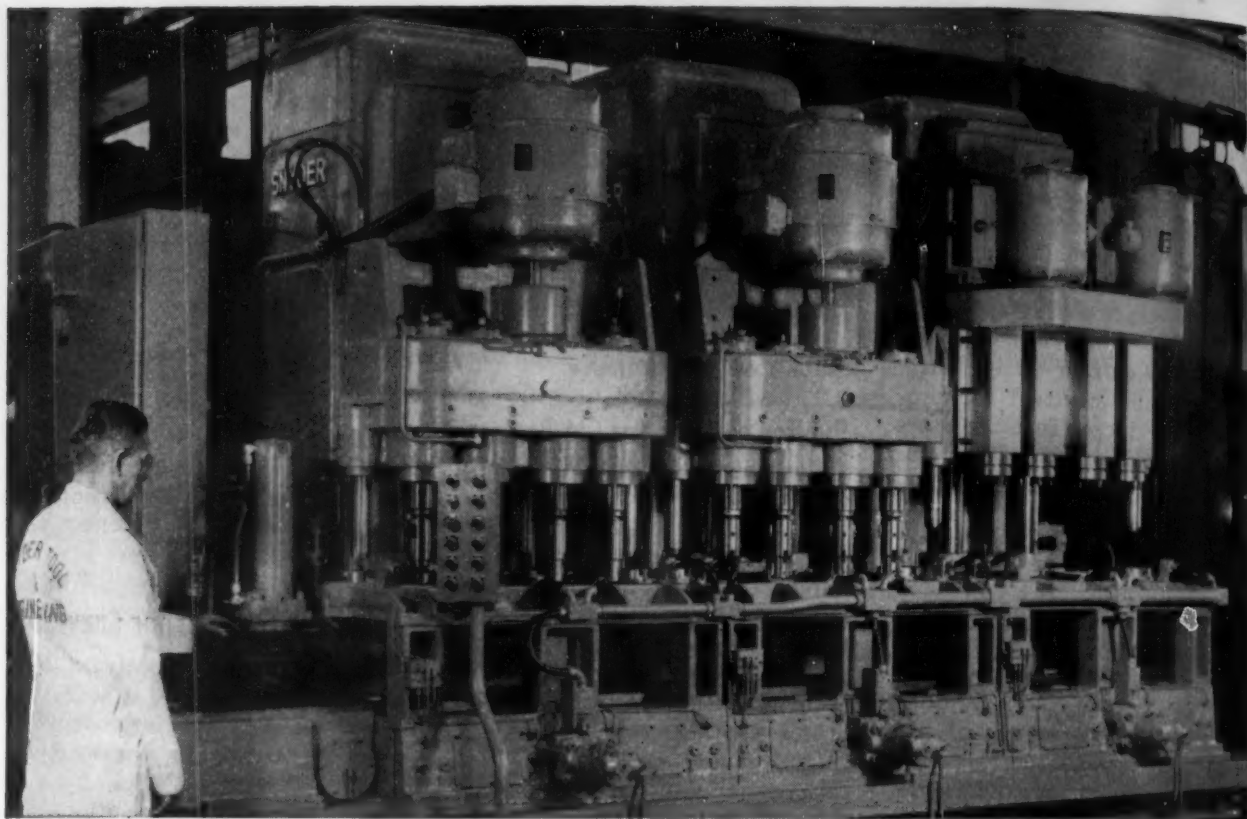
Another defense contract has been announced by Chevrolet-Cleveland. New job is production of final drive units for medium tanks.

Chevrolet-Cleveland is already building front axles and metal parts for 6 x 6 military trucks.

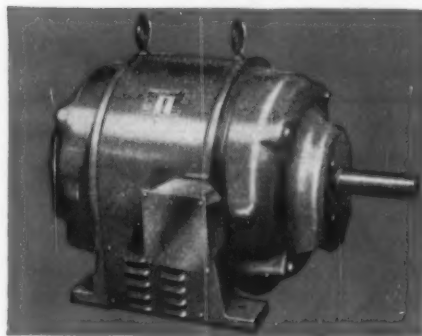
THE BULL OF THE WOODS

By J. R. Williams

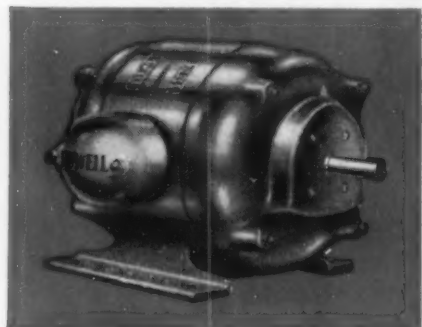




Three jobs done, instead of one!



Howell Type F Motor. A high slip, high torque motor designed for punching and boring operations. Sizes $\frac{1}{2}$ to 200 H.P. in open frames; $\frac{1}{2}$ to 125 H.P. in enclosed frames.



Howell Type SC, general purpose, protected-type Motor. Ideal for driving machines and equipment where atmosphere is moisture- or dust-free. Horizontal or vertical mounting.

This 7 station transfer-type boring machine was designed and built to replace *three* machines!

It rough bores, semi-finish bores and finish bores cylinder sleeves to exacting tolerances in one continuous, automatic operation.

Howell engineers worked closely with this manufacturer to provide the right type and size motor for each application. Two 15 H.P. and two 5 H.P. Howell Industrial Motors supply dependable power for the twelve boring spindles. A $7\frac{1}{2}$ H.P. Howell motor operates each of the three hydraulic pumps which control the rough, semi-finish and finish heads. Each motor was engineered for its job!

This is a typical example of the service Howell offers you. We will work with you, both in your plant and at Howell, to design precision-built, quality motors for your jobs.

Our research facilities, engineering experience and manufacturing skill are at your service. May we help you?

HOWELL ELECTRIC MOTORS COMPANY

Howell, Michigan



HOWELL MOTORS

HOWELL ELECTRIC MOTORS CO., HOWELL, MICH.

Precision-built industrial motors since 1915

West Coast Report

New Steelmaking Plant Expected

Electric furnace works seen for Los Angeles area . . . Anticipate new Harvey fabricating shop . . . Mixed feelings on expected Alaskan record building boom—By R. T. Reinhardt.

Still another increase in steel production in southern California seems probable.

Western Tube Co., recently granted a certificate of necessity for \$10 million, is reportedly seeking a site in the Los Angeles area not only for a tubing plant, but also for an electric furnace operation of undisclosed size to produce its own steel.

Officials of the company are expected to be in southern California this week to pick the site and line up scrap sources—which won't be easy to accomplish.

Expansion? — There is considerable evidence that Harvey Machine Co. of Torrance, Calif., is planning to increase its aluminum extrusion operations somewhere within a 50-mile radius of Los Angeles.

Several men highly skilled in aluminum fabrication have recently been added to Harvey's staff and an announcement of a new fabrication division may be expected.

With a dependable source of pig aluminum assured through its tie-up with Anaconda to build a reduction plant at Kalispell, Mont., Harvey is in a position to increase its fabrication operation even though the Kalispell plant won't be in production for more than a year.

Black and White—Pacific Northwest metalworking plants are awaiting the expected record breaking construction boom in Alaska next spring with mixed emotions.

Unquestionably the fantastic construction there will bring a healthy volume of business to Seattle and other Northwest cities, but will at

the same time attract many of the hard-to-find skilled workers because of the high wage rates and overtime for the asking. A wage boost recently granted sheet metal workers brings their hourly pay to \$3.50.

Alaska is also of interest to Northwest steel producers. During the past summer that territory could be depended upon to produce about 10,000 tons of scrap per month for Bethlehem Pacific Coast Steel Corp. alone. With winter coming on this flow is expected to dribble down to less than 1000 tons.

Big Business—Boeing Airplane Co. of Seattle has allowed only bits and pieces of information to leak out concerning its expansion. Now it is announced officially that the total will be in the neighborhood of

\$50 million of which half is being financed by the taxpayer.

Included in the program are more than \$10 million of machine tools, hangar, jig-building shop, engineering building and warehouse. Some of the construction is underway and the remainder will be started within a period of 4 to 6 months.

Coal Mine Sold — Independent Coal & Coke Co. of Salt Lake City last week took over operation of the Clear Creek and Castlegate coal mines of the Utah Fuel Division, Kaiser Steel Corp.

These have been operated as commercial coal mines and Kaiser Steel retains the coking quality coal mines included in the purchase of the Utah Fuel properties last year. Three other commercial coal properties in Colorado owned by Kaiser are also for sale.

Kennecott Research — Kennecott Copper Corp. has submitted to the University of Utah an offer to construct a \$1,250,000 research center on the campus in which the company's western research operations would be carried on.

Kennecott would operate the center under lease arrangement for 40 years and then turn it over to the university. Students would be given opportunities to participate in research projects.

May Need Steel—Prospects for a \$32 million natural gas pipeline from southeastern Utah to Salt Lake City have brightened with the bringing in of a major gas well by Byrd-Frost, Inc.

Utah Natural Gas Co. was given a conditional permit last spring by the Utah Public Service Commission to build the line provided adequate gas supply and reserves were developed within a year. The new well on Utah Fuel Co. property in Carbon County shows a flow of 7 million cu ft per day.



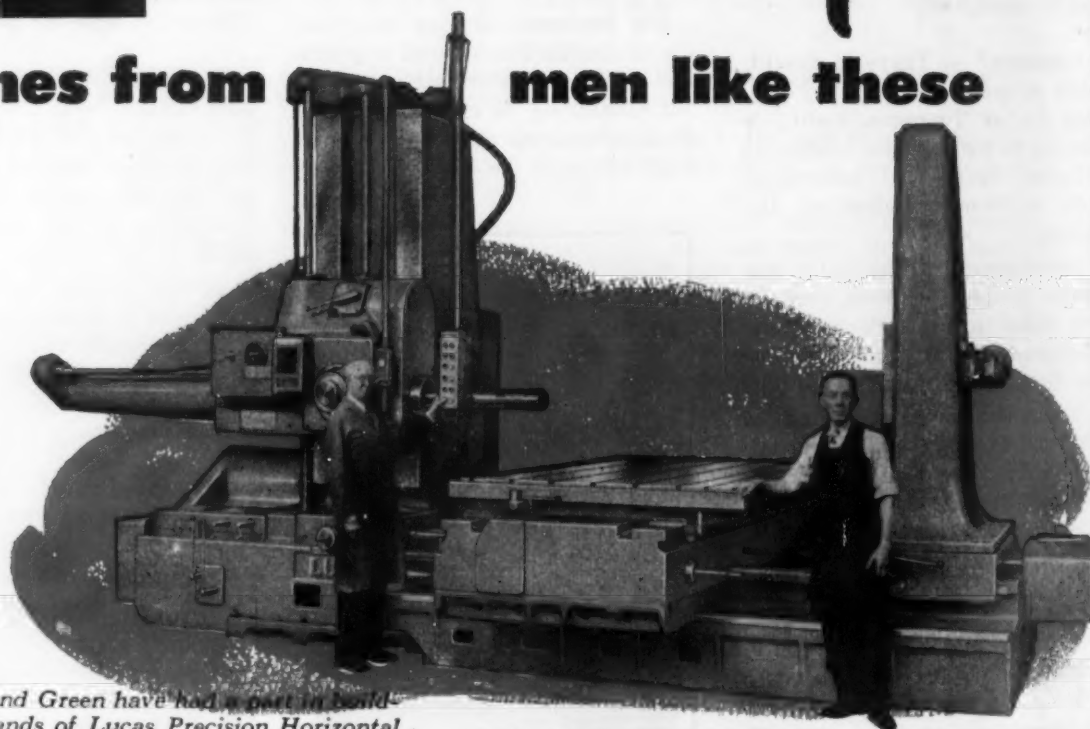
MISSILES: Pre-formed walls are raised into place at Navy-Convair Guided Missile Plant in Pomona, Calif. It will be operated by Consolidated Vultee Aircraft Corp.'s Guided Missile Div. for Navy Bureau of Ordnance.

● Here is the first Lucas Machine ever built. When Ed Wilde (left) started working at Lucas, this machine was brand new. Today Wilde is foreman of our Lathe Department. H. T. Green, Tool Room foreman joined us a year later. They have a combined experience and know how of 99 years on Lucas Machines.



Lucas Leadership

comes from men like these



● Wilde and Green have had a part in building thousands of Lucas Precision Horizontal Boring, Drilling and Milling Machines. They represent the concentration on the development and improvement of a single product over half a century that has kept Lucas far ahead of the parade.

LUCAS Precision

HORIZONTAL BORING, DRILLING AND MILLING MACHINES

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Machine Tool High Spots

Importers Stiffen Selling Campaigns

German tool reps may concentrate on imports that complement rather than compete head-on with U. S. production . . .

Kurt Orban Co. starts machine tool import arm—By G. Elwers.

Though some individual German machine tool makers are reportedly not too interested in concentrated invasion of the U. S. market, impressive sales efforts are being made by U. S. distributors on behalf of many German firms. Typical is Kurt Orban Co., of New York.

Orban, like many others in this field, is no fly-by-night firm out to make temporary hay during the current machine tool shortage. This is a long-established firm importing from Germany. It has not had, before, a machine tool import division. But now Orban is setting up a solid foundation for machine tool sales which it obviously expects to continue in the later competitive market.

Cleveland Center—Orban has set up, and will shortly expand, a large center in Cleveland for demonstration and service of its German machine tools. This center will also stock machines and parts, and is in addition to Orban's New York facilities. Most import firms in the business to stay, realizing that an objection to foreign tools is difficulty of obtaining service and parts, are investing heavily in warehouse and service organizations.

U. S. distributors of foreign tools say they don't see particular cause for concern over their activities by U. S. machine tool builders. Most of the equipment they import, the distributors say, will not compete head-on with U. S. machine tools.

They intend to concentrate mostly on filling gaps in the production picture not adequately

covered by U. S. types of tools. Typical imports are ultra-precision jig borers, and lathes which are inexpensive and not particularly flexible, but designed for high precision and high output.

Interest in Imports—In the present urgent need for machine tools, American interest in foreign machine tools is naturally high. Imports are helping greatly to remedy defense production lags due to shortages of machine tools. The aircraft industry, particularly, is a heavy buyer in Europe.

Importers of foreign tools are, in a way, performing a service to U. S. machine tool builders by helping to relieve the pressure on them. Too high a backlog of machine tools gets government plan-

ners thinking the industry cannot handle the defense job.

Interference?—Washington gets ideas, as it has about the steel industry, that maybe it should take a direct hand in upping production by building plants itself. Even if the planners don't go that far, they might come forward with ideas unpleasant to industry.

One case already known is the government-sponsored production of Bullards by General Motors. Reportedly neither Bullard nor General Motors was much in favor of the idea, but Washington pushed the arrangement through.

Shipments Rise—Machine tool shipments in October exceeded the new orders received by the industry, according to preliminary figures from the National Machine Tool Builders' Assn. This caused a drop in the backlog, the only such drop of any size since Korea, from 23.5 to 22.1.

The new order index for October rose from 380.2 to 398.6. However, the shipment index jumped to a preliminary figure of 220.7 from 189.8 in September.

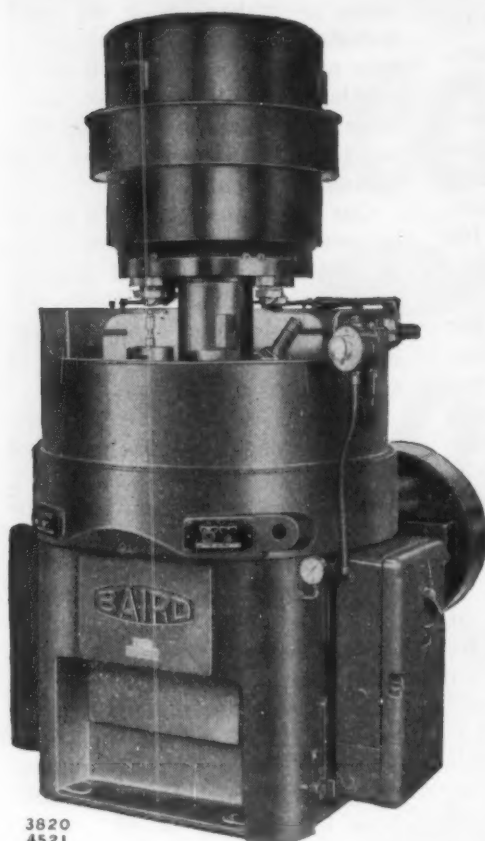
Graded Priorities—A boost for graded priorities for machine tools was given recently when Studebaker opened its new eastern assembly plant recently. Attempts to build jets in this plant have been delayed "several months," said Studebaker's president Vance, because the company's machine tool orders have not been given high enough priority. "In view of the importance of this engine," Vance said, "we expected its machine tool requirements would be given priority over other defense needs which were not so pressing." Word from Washington is that such a graded priority system, for aircraft defense projects at least, is to be announced soon.



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HIGH PRODUCTION TOOLING3820
4521

BAIRD 54 VERTICAL LATHE
showing splash guard for
wet operation

The turret is driven through worm and gears . . . spindles mounted in roller bearing and driven by helical gears. Changes in all speeds are easy and inexpensive. Control stations are within easy reach, the spindle control at left; control at right for turret and tool arms . . . protected to

4 SPINDLE VERTICAL LATHE with Continuously Revolving turret

... ELIMINATES NON-PRODUCTIVE INDEXING TIME

The Baird 54VC lathe was designed for dry or wet cutting of light jobs, boring piston ends, facing, turning bands, ogives, etc. In this specific job, a Pump Rotor was finished on the O.D. and both faces finish turned and chamfered. The tools feed both on the in and out of the cutting stroke. Work is held on an arbor type holding fixture.

The turret, carrying 4 work spindles and 4 sets of tool bars, rotates at 32 seconds per cycle. Thus, one part every 8 seconds . . . 450 pieces per hour. Stock removal is approximately .012" on O.D. and .010" on faces.

Photograph at right shows actual size of pump rotor. See above for operations performed.



prevent feed of tools to work unless spindles are revolving. All electrical equipment is enclosed, with wiring concealed. The Baird 54 Vertical Lathe is a most versatile machine . . . and a profitable one for work within its range . . . so "ask Baird about it."

38A51

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MACHINES • AUTOMATIC PRESSES • TUMBLING BARRELS**

The **Iron Age**

SALUTES

Walter L. Seelbach

An experienced foundryman is helping others in the industry do a better job. . . Awarded gold medal.



MUCH wisdom comes only from experience. Walter L. Seelbach carries a storehouse of such wisdom, acquired by living and working with the foundry industry for 41 years.

Walter was one of the founders of the Gray Iron Founders Society and its first president. At the Society's annual meeting in October he received its gold medal award for "outstanding leadership and unselfish service."

This year he is serving as president of the American Foundrymen's Society. In that capacity he attended the International Foundry Congress held at Brussels, Belgium, and has been traveling the banquet circuit since urging foundrymen to build a better industry.

Between trips he's hard at work as president of Superior Foundry, Inc. He became president of Superior in 1946 and since then the firm has seen two major expansions.

Walter was one of the organizers of the Foundry Educational Foundation and serves as chairman of the Foundry Industry Advisory Sub-Committee for the Munitions Board. He's also chairman of the Cleveland Scrap Mobilization Committee.

Although still a member of the Shaker Heights Country Club, he finds little time for such diversion. An ardent hunter and fisherman, he makes sure to get out on at least one such trip each year.

ONE always stands out!

and among refractory
dolomites it's —

BAKER'S MAGDOLITE

The acceptance of Magdolite among leading users of refractory dolomites throughout the country is the result of years of dependable service.

Magdolite's superior chemical, physical and mineralogical composition, coupled with Baker's continued research and development in the application of refractories, assure you of a minimum of maintenance and repairs.

When you buy . . . specify Baker's Magdolite . . . the logical choice in refractory dolomites.

ALWAYS 5 WAYS BETTER—Composition •
Preparation • Economy • Strength • Quality



THE J. E. BAKER COMPANY, York, Pa.
Plants: Billmeyer, Pennsylvania • Millersville, Ohio



THE IRON AGE

The Iron Age

INTRODUCES

John R. Bausch, elected as vice-president in charge of finished products for DODGE STEEL CO., Philadelphia.

Arnold K. Brown, named executive vice-president of the AMERICAN MACHINE & FOUNDRY CO., New York. Mr. Brown was formerly vice-president of Brown & Sharpe Mfg. Co.

K. Jerry Morray, transferred to silicone plant at Waterford, N. Y., of GENERAL ELECTRIC CO., as a headquarters' sales specialist. Earl F. Arnett has been appointed manufacturing engineer for the Coshocton, Ohio, plant of the chemical division's laminated and insulating products department. H. K. Pritchard, appointed manager of general purpose transformer sales; J. P. Coughlin, manager of aircraft and electronic transformer sales; and A. E. Rowe, manager of lighting component sales.

Curtis R. Henry, named vice-president of VALLEY MOULD & IRON CORP. Before joining Valley Mould in 1935, Mr. Henry held various positions with United Alloy Steel Corp., and Alan Wood Steel Co. W. C. H. Ramage was named assistant vice-president.

Harold E. Erf, appointed sales executive - administration, STERLING GRINDING WHEEL DIVISION, and will be located in the company's district office in Chicago.

Benjamin Sampson, elected as vice-president of the K. H. HUPPERT CO., Chicago.

Dr. J. O. Hendricks, promoted to the post of associate director of the MINNESOTA MINING & MFG. CO., St. Paul, Minn. Dr. Matthew W. Miller and Dr. H. M. Scholberg, were named assistant directors.

Charles Penk, elected president of ALLIED ELECTRIC PRODUCTS, INC., Irvington, N. J., and its subsidiary Sheldon Electric Co.

E. A. Gilmore, appointed superintendent of the new seamless tube mill being built by COLORADO FUEL & IRON CORP. in Pueblo, Col.

A. J. McAllister, appointed president and general manager of the Detroit Gear Div., of BORG-WARNER CORP. Mr. McAllister succeeds Howard E. Blood who continues as a vice-president and director of the parent corporation and will also be in charge of the new products development laboratory.

Oscar M. Schulze, named acting chief engineer of REPUBLIC STEEL CORP.'s Central alloy district at Canton, Ohio. Herman Sandberg named chairman of the firm's mechanical maintenance committee.

Mark C. Stebbins, appointed sales representative for SOSS MFG. CO.'s invisible hinges in the state of Michigan and Toledo.

Thomas J. Sheridan, appointed branch manager, Philadelphia office of the MAGNACREST CORP.

E. C. Klotzburger, named manager of the new dual-purpose plant at Arlington, Tex., for GENERAL MOTORS CORP. W. J. Croxson succeeds Mr. Klotzburger as manager of the B-O-P assembly division's Linden plant.

T. H. Morrell, appointed chief engineer at the Charles City, Iowa plant of the OLIVER CORP. P. Y. Burns has been advanced to assistant chief engineer, and will be succeeded by Homer Dommel as supervisor of experimental engineering.

Turn Page



RALPH R. KELLEY joined the Brooks & Perkins staff as general superintendent of the new Livonia Mill Division.



EUGENE W. PHILLIPS, named construction manager, seamless tube installation project, for Republic Steel Corp., Chicago district.



WILLIAM P. BITTENBENDER, elected president and director of International Selling Corp. and Intsel Metals Corp., New York.

FOR SURPLUS STEEL PLANT EQUIPMENT

CALL Curry!

Fast delivery of "hard to get" equipment . . . important cash savings . . . dependable installation and engineering of accessories—you gain all these when you buy surplus steel plant equipment from Curry. Perfectly serviceable and in good operating condition—we buy and sell complete rolling mills, roll grinders, shears, press brakes, cranes, ladles, motors, etc.

Before making any steel mill equipment purchase, you will profit by checking first with Curry.



Write for the "CURRY LIST"!

Lists all available surplus steel plant equipment. Get your copy NOW!

See our ad on page 147

ALBERT Curry & CO. INC.

STEEL PLANT EQUIPMENT

941 OLIVER BUILDING • PITTSBURGH 22, PENNA.
Phone Atlantic 1-1370

Personnel

Continued

R. A. Metcalf, appointed sales manager of MILLER ELECTRIC MFG. CO., Appleton, Wis. C. Burnell Abel has been appointed vice-president in charge of sales.

H. F. Robertson, appointed controller of QUAKER RUBBER CORP., Division of H. K. Porter Co., inc., Philadelphia.

Alfred Lippman, Jr., named general manager of the laboratories of the COMMONWEALTH ENGINEERING CO., Dayton.

Harry W. Gordon, appointed district manager in the Northwest, for the AMERICAN PULLEY CO. with offices in Seattle. Sidney H. Hewett was named Detroit district manager.

Wladimir P. Lewicki, appointed works manager of SOUTHWEST STEEL ROLLING MILLS, Los Angeles.

B. W. Wild, appointed assistant works manager of COLUMBIA MACHINERY & ENGINEERING CORP.'s plant in Hamilton, Ohio.

John Bidner, named assistant to the general superintendent of SHARON STEEL CORP. Replacing Mr. Bidner as openhearth superintendent will be Francis J. Herman. Raymond C. Oswald, relief foreman at the Lowellville works becomes assistant openhearth superintendent at the Roemer Works in Farrell.

L. A. Lambing, appointed specialist-steelmaking on the staff of the vice-president-operations and H. H. Shakely becomes assistant works manager, Pittsburgh Works Div., of JONES & LAUGHLIN STEEL CORP.

Russell G. Whittemore, named acting director, Product Development Department for PITTSBURGH PLATE GLASS CO.'s glass division.

Donald F. Kane, joined the engineering staff of HUNT-SPILLER MFG. CORP., Boston.

Jay Misenhimer, appointed to the newly created position of manufacturing engineer of the HYSTER CO., Portland, Ore.

James S. Anderson, returned to his duties as assistant general sales manager of BABCOCK & WILCOX TUBE CO., Beaver Falls, Pa.



ROY W. BROWN, appointed direct sales representative, Southwest territory, for the Refractories Div., Carborundum Co., Perth Amboy, N. J.



GEORGE C. FLOYD elected as vice-president of Vanadium Corp. of America, New York.



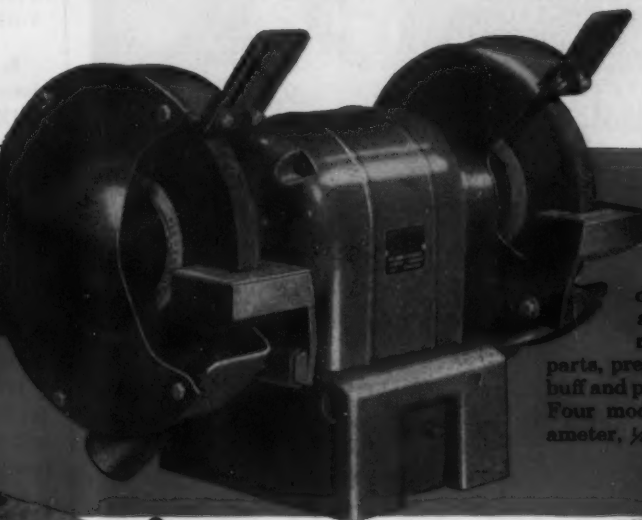
FRANK F. CAMBEST, appointed works manager, Pittsburgh Works Div., Jones & Laughlin Steel Corp.



R. F. DAVIS, recently promoted to regional manager, Eastern region, for Cummins Engine Co., Inc., in New York.

Grinding Problem?

Black & Decker Bench and Portable Grinders speed up a wide range of jobs!



B&D Bench Grinders sharpen cold chisels, wood chisels, twist drills, many other tools; handle many types of grinding and metal removal; remove rust, clean dirty, gummy parts, prepare surfaces for painting; buff and polish plated metal surfaces. Four models: 6", 8", 10" wheel diameter, $\frac{1}{4}$ to 1 H.P.



B&D Portable Grinders let you bring the tool to the work when work is heavy, bulky, hard to move. Prepare surfaces for welding; smooth welds; snag and grind castings; remove rust, scale, old paint; cut off old rivets, bolts, studs; grind, clean and buff frames, cabinets, etc. 5" and 6" wheel diam.

Quality-built models to suit your needs, give long service!

Black & Decker Grinders do *more* jobs because of their surprising versatility and "tailored-power" B&D motors—do them *better* because of their real quality construction! B&D Bench Grinders give you dependable, B&D-built constant-speed motors; streamlined design for more work clearance; adjustable U-shaped tool rests for better support; strong steel wheel guards for extra safety. B&D Portable Grinders give you perfect balance for easier handling; splined gear mountings for perfect power transmission; steel bearing inserts for smooth running; complete abrasive dust protection for vital parts; extra-safe welded steel wheel guards.

Whatever your problem, see your nearby B&D Distributor *first* for expert help—and for eye-opening demonstrations of timesaving, cost-cutting B&D Tools! Write for free catalog to: THE BLACK & DECKER MFG. CO., 651 Pennsylvania Ave., Towson 4, Maryland.



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PORTABLE ELECTRIC TOOLS

"AMMUNITION"

... FOR YOUR PRODUCTION LINE!



KEYSTONE *wire*

Men on the production line
... as on the battle line ...

must have good ammunition if they are to reach their objective. Cold heading stock for the manufacture of screws is a "specialty" in which Keystone excels. When a shipment of Keystone wire arrives at your plant you may be sure it carries every up-to-the-minute metallurgical refinement for its intended job.



"SPECIAL PROCESSED"

COLD HEADING WIRE

Keystone's "special processed" cold heading wire has uniform upsetting and forming qualities plus excellent flow properties which often double plug and die life. Production reports show less waste, fewer rejects, reduced inspection time and a higher quality finished product.

Keystone Steel & Wire Company
PEORIA, ILLINOIS

More
SCRAP
today...
More
STEEL
tomorrow!

Personnel

Continued

Clinton K. Royce, joins the staff of VANANT PRODUCTS and will be located in Milwaukee.

Herman B. Robbins, named sales manager of the generator set division of JOHN REINER & CO., New York.

Edward J. Wilder, appointed field representative for the AUDIO & VIDEO PRODUCTS CORP., New York.

E. A. Yaeger, appointed vice-president of NATIONAL DISTILLERS CHEMICAL CORP., New York.

Ellis T. Beck, appointed Eastern district manager of the Votator Div. of the GIRDLER CORP., Louisville.

Bernard C. Case, appointed manager of electrochemical development of the HANSON-VAN WINKLE-MUNING CO., Matawan, N. J.

Willoughby F. Brazeau, joined the W. R. GRACE & CO., New York, and will serve in the ore and metal department.

Frank A. Rusciano, promoted to vice-president and works manager of the LITHIUM CO., Newark, N. J.

J. L. Robinson, named New England manager of the GASFLUX CO., with headquarters in New Haven, Conn.

OBITUARIES

A. J. Bialoski, 74, was with Bialoski Bros., scrap dealers, from 1903-1929, and more recently associated as a dealer with Luria Bros.

Edwin S. Mills, Sr., 81, well known veteran of the steel industry. Mr. Mills entered business in Cleveland with Carnegie Steel Co. as manager of sales in 1895.

Roy Alexander, associated with Behrens Boiler Works, Muskegon, Mich., before his retirement in 1937, died recently.

Robert N. Blakeslee, 58, vice-president and director of engineering of Ajax Electrothermic Corp., Trenton, N. J. Mr. Blakeslee had served with Ajax for 24 years.

Richard H. Lewis, chairman of the executive committee of the board of directors of Ruud Mfg. Co., in Pittsburgh recently.

E. C. Schaaf, 49, retired manager of the Atlanta warehouse of Wheeling Corrugating Co., at his home.

CERMETS

may answer

JET DESIGNERS' PRAYERS

The Iron Age
FOUNDED 1855
Technical Articles

Part I

By W. J. Koshuba*



J. A. Stavrolakis*

Aircraft Nuclear Propulsion Project
Aircraft Gas Turbine Dept.
General Electric Co.
Oak Ridge, Tenn.

Developments in jet engines, rockets, and other high-temperature machines, have caused a vigorous acceleration of research and development activity in metal-ceramic combinations over the past five years. Even so, metal-ceramics, or "cermets," are still in a very early stage of development.

These synthetic materials may be defined as composites of inorganic substances with metallic constituents intimately bonded mechanically or chemically. The resultant properties differ from those of the parent constituents. Cermets may be classified on a compositional basis. Included would be metal-metal oxide combinations, metal-metal carbide, and metal-metal nitride, boride or sulfide, as well as combinations of these. There is a certain inadequacy to this type of classification when a better insight into some of the more fundamental aspects of cermets is desired.

Another means of classification relates to the type of union. On this basis, there are three cermet types.

Mechanical mixtures are characterized by a sharp interface between constituent particles. The grains of both components show no reaction and no apparent recrystallization of either takes

Pressed-and-sintered ceramic-metal mixtures are still in the experimental stage, but in jet turbines it already looks like they will replace some strategic alloys—which are not too satisfactory anyway. Hydrostatic and hot pressing seem the best forming methods. Carbides, oxides, alumina, chromium, titanium, beryllium have been investigated.

place. Bonding is probably due to the continuous phase which completely envelops the other.

An example of this type of mixture is beryllium-beryllium oxide (Be-BeO), where the individual beryllium oxide particles are not wet by the matrix of beryllium as shown by Fig. 1. The contiguous pores are not filled with beryllium metal. Compositions of silicon-silicon carbide (Si-SiC) behave similarly. However, there is evidence of wetting of SiC when the silicon is brought to a temperature above 3090°F (Fig. 2) where the pores are completely filled.

Interfacial spinel metal-ceramics are characterized by a reaction layer between the metal and

*The work described was done by the authors while employed in the NEPA Project, Fairchild Engine & Airplane Corp., Oak Ridge.

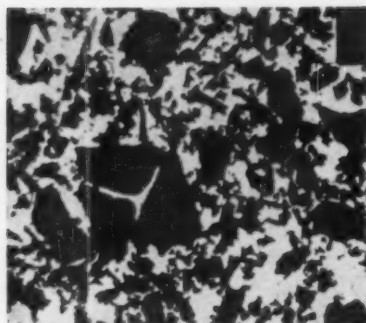


FIG. 1—In this mechanical cermet mixture (72 pct beryllium oxide-28 pct beryllium), the oxide particles are not wet by the beryllium matrix. Unetched. 125X.



FIG. 2—There is evidence in this mechanical mixture (silicon-silicon carbide) interface of the wetting of the ceramic material by the metallic constituent. Pores are completely filled. Unetched. 125X.

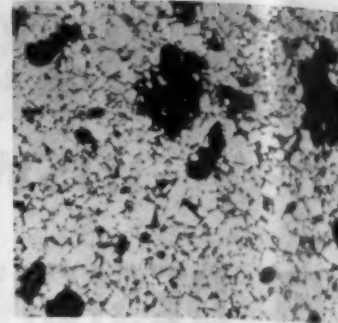


FIG. 3—Solubility of nickel in 3000°F range is shown in this 92 pct titanium carbide, 8 pct nickel cermet. Etched, hydrofluoric and nitric acid. 125X.

Cermets may answer prayers—(continued)

ceramic constituents. These cermets may be considered as metastable systems. They are formed at temperatures far above the range of application. The reaction at the temperature of sintering must be quite rapid to be practicable. Given sufficient time, the reaction at the interface of the metal and ceramic proceeds until one of the reactants is completely consumed. An example of this type is the chromium-alumina ($\text{Cr-Al}_2\text{O}_3$) composition.

Some cermets are in solid solution

Solid solution cermets are characterized by a polyatomic structure. This consists primarily of a solid solution between ceramic and a metal or metal alloy phase. The amount of metal required for saturation of the ceramic phase varies with the reactants. There is evidence of the solution of nickel, cobalt and iron in titanium carbide (TiC) in the range of 3000°F. Nickel exhibits the highest solubility and iron the least. An example of such solubility is evident in Fig. 3. Additions of tantalum and columbium carbides increase the oxidation resistance of TiC .¹

Cermets can be pressed and sintered

Cermets may be fabricated by conventional methods used in the ceramic and powder metallurgy industry. The cermet mixture is prepared in blending or ball-milling equipment until the desired uniformity of distribution of both components is achieved. This tends to smear the metal over the ceramic particles, resulting in a more uniform mixture. The use of balls made of the metal to be employed in the metal-ceramic serves the same purpose, but the amount of metal thereby introduced cannot easily be controlled.

The particle sizing and shape of the powders are important for good compaction and for the later sintering operations. A range of grain sizes from coarse (150 microns) to fine (325 microns) is generally required. The finer the particle size distribution, the greater is the effective surface area of the powders. With a larger surface area, more intimate mixing is possible and better wet-

ting or bonding between metal and nonmetal results. There is, however, a practical limitation to the reduction of grain size and to the increase of surface area.

Another disadvantage of extremely fine metallic powders is their tendency to oxidize rapidly; even iron and nickel, 0.1 micron and finer in size, tend to be highly pyrophoric. With increasing surface area and increased amounts of absorbed air or gas films, some powders have greatly diminished packing densities. They become more difficult to handle. Consequently, it is preferable to compromise, achieving uniform, dense compacts through the laws of particle packing. By utilizing three ranges of sizes—coarse, medium and fine—a densification up to 70 pct may be expected by cold pressing.

Sintering increases densification

Additional densification will occur during sintering or firing, depending on the composition. Firing is accomplished in the conventional manner with a controlled, inert atmosphere. Furthermore, the sintering temperature should not be high enough to melt out or boil out the metal.

As the porosity of the pressed compact decreases during firing because of shrinkage, coalescence, wetting and recrystallization, the surface area of the metallic particles subject to oxidation is appreciably reduced. A fired metal-ceramic compact is consequently more stable than the unfired mixture. The shapes produced by this method are necessarily simple. Complicated shapes are not easy to remove from the dies and usually do not possess uniform density.

Briquetting or cold compacting of metal-ceramic powder mixtures can be performed in certain cases with rubber dies. Contouring of the rubber molds imparts fairly intricate shapes to the compacts. Steel dies or retainers are employed to support the rubber die parts. Pressures up to 20 tons per sq in. are frequently used and may be exerted by a ram working directly against the rubber. Isotatic application of pressure makes possible compacts of relatively uniform density.

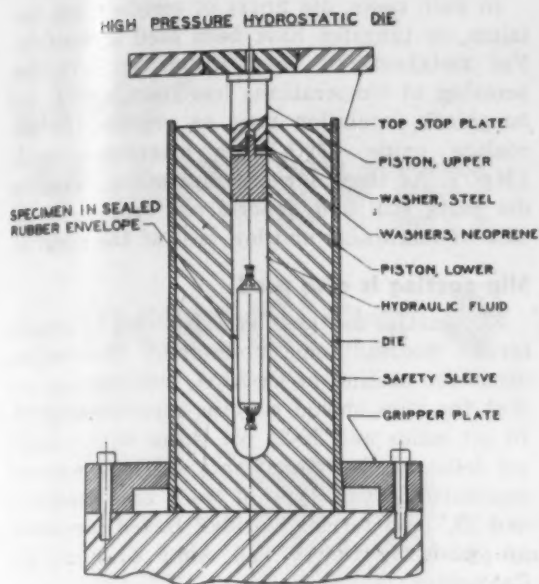


FIG. 4—A type of high-pressure, hydrostatic pressing chamber, used to form powdered ceramics and metals.

The hydrostatic die can also be used to press cermets, applying a more uniform pressure than rubber pressing. Fig. 4 shows a type of high-pressure, hydrostatic pressing chamber used at pressures up to 50 tons per sq in. This cross-sectional view illustrates a high alloy steel die block with a mild steel casing lightly shrunk or press-fitted for safety reasons. A reservoir for excess fluid is provided at the top.

The die is securely held against a hydraulic press platen at the base. The die punch is rigidly fastened to the upper press platen. The

enclosed cavity contains the specimen to be consolidated, completely enveloped in a rubber bag to prevent oil contamination. Oil or water soluble oil-water mixture hydraulically transmits any pressure applied by the punch. As pressure is increased, the powder compact is uniformly consolidated. The punch is withdrawn after pressing and the rubber bag is removed with the specimen.

By this method of homogeneous compaction, it is often possible to make usable parts from pure abrasive powders. If fabricated by the usual cold-pressing techniques, these materials would require binders to insure adequate green strength.

Additional advantages of hydrostatic pressing are freedom from laminations and planes of weakness and uniform density regardless of shape of compact. Large blanks may be hydrostatically pressed and subsequently machined and fired to high density.

In general, hydrostatic pressing may be employed to produce bodies of metal-ceramic mixtures of adequate strength at consolidation pressures of 5 to 20 tons per sq in. However, for beryllium carbide-metal composites, it has been empirically proved that better physical properties are obtained with forming pressures of 60 tons per sq in.

Cermets may also be produced by hot pressing. For the hot pressing operation, the powder mixture is packed into graphite dies and compressed with graphite punches at temperatures depending upon the amount and nature of bond metal and ceramic. Molding pressure is maintained between 2000 and 5000 psi. The travel of the punches into the die cavity as compaction pro-

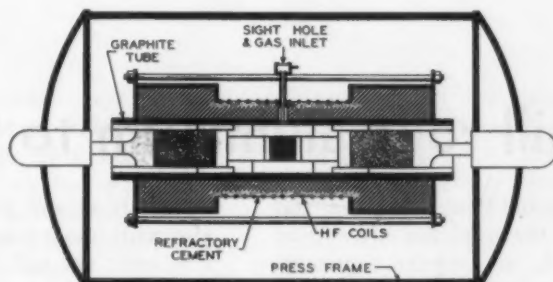
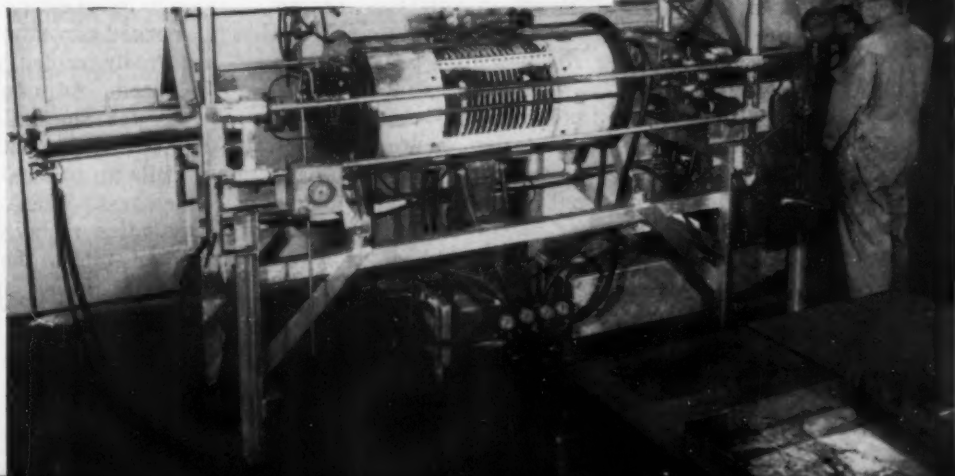


FIG. 5—Overall view and cross-section of furnace-and-press assembly used to hot-form cermets. Furnace is rated at 100 kw and rams provide 50 tons pressure.



Cermets may answer prayers—(continued)

gresses indicates whether or not the hot pressing operation is developing satisfactorily. Under correct molding conditions, the powders tend to occupy the volume calculated for a particular composition at maximum (theoretical) density in the die.

Fig. 5 illustrates the loading (or unloading) operation of a 100-kw furnace assembly designed in the Nuclear Energy Production Administration laboratories. The power source is an Ajax-Northrup motor generator operating at 3000 cycles per second. Pressure is applied by means of two 50-ton rams set on a horizontal axis.

Graphite tube supports die

The die is supported by a 10 in. OD graphite tube which extends over the length of the furnace proper. This tube is inductively heated by the high-frequency coils. The die volume is supplied with a protective atmosphere from a sight hole and gas inlet combination. A small Vickers pump maintains pressure at any desired value within the range of the press.

Certain metal-ceramic compositions require the use of a protective, essentially non-carbonaceous atmosphere during the hot pressing operation. Metal-ceramic compositions containing beryllium carbide (Be_2C) as the ceramic phase require hydrogen, argon, or helium to prevent contamination by nitrogen in the reactive temperature range. A non-carbonaceous atmosphere is desired when such metals as titanium, chromium, or molybdenum are utilized as the metallic component.

In such cases, die liners of molybdenum, tantalum, or tungsten have been used successfully. For metal-ceramic compositions involving hot pressing at temperatures less than 3090°F , the lampblack insulation may be replaced by zirconium oxide (ZrO_2) or magnesium oxide (MgO). At these lower temperatures, graphite die parts still find general use because of the ease of machining and low cost of the material.

Slip casting is also used

Slip casting methods are also used to prepare cermet bodies. Some noteworthy observations about the casting of $\text{Cr-Al}_2\text{O}_3$ combinations are that the slips should contain approximately 70-75 pct solids and 30-25 pct water with 1 to 1.5 pct deflocculant. Deflocculants which have proved successful in this type of work are "Daxed 11 and 23," and ferric chloride.² Daxed compounds are made by Dewey and Almy Chemical Co., Cambridge, Mass.

Extrusion methods also lend themselves to cermet fabrication. Larger amounts of plasticizers or lubricants, such as 18 pct rubber in xylol, are necessary than in cold-pressing techniques.

Part II of this article will appear next week.

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- ¹ Redmond, J. C. and Smith, E. N., "Cemented Titanium Carbides," American Society for Metals Transactions, p. 185, 1949.
- ² Blackburn, A. R. and Shevlin, T. S., "Progress Report on Fabrication and Physical Properties of 30 pct Cr—70 pct Al_2O_3 Cermets," Air Material Command Project Report No. 53, Ohio State University, April, 1949.

Fast foil mill rolls aluminum to 0.00025 in.

Huge demands for aluminum strip and foil have demonstrated the need for high-speed cold-rolling mills capable of extreme accuracy. Mills able to produce 0.00025-in. foil at speeds to 3000 fpm have been developed by Loewy Rolling Mill Div. of Hydropress, Inc.

Two recently completed installations permit high-speed rolling of aluminum foil 42 in. wide. Each of these units consists of a 4-high roughing mill 10x48 in. and 24x48 in. wide and a 2-high finishing mill 18x48 in.

From a pushbutton station on the delivery side the operator controls screwdowns, in unison or separately, and front and back tension. Speed is controlled according to the thickness of the material leaving the mill as indicated by an electric gage.

The mill may be accelerated or decelerated

steplessly at any preset rate. The operator may also maintain predetermined front and back tension while the mill is running or idle.

Bearings for both the 4-high and 2-high mills are of the constant-temperature, oil-film type. These eliminate the danger of off-gage material due to overheating of bearings at high speeds.

Forged chromium alloy steel working rolls are internally cooled and chocks are hydraulically balanced. Adjustable spraying and wiping devices for the rolls permit accurate control of roll temperature and crown.

Coils up to 3000 lb are wound on interchangeable cores. These are loaded on the winding or unwinding reels by carriages governed from the control station. To correct telescoping in the coil, unwinding reels are provided with a device for axial movement of the drum.

CHIP CONVEYER

handles 6 tons an hour



By George Elwers
Machinery Editor

Two main conveyers and 26 feeders collect cast iron chips in the Oldsmobile Rocket engine plant. System delivers chips direct to hopper above railroad spur. Labor, floor space savings result. Moves 6 tons of chips per hour.

The modern high-speed machine tools in the famous Rocket engine plant of Oldsmobile at Lansing, Mich., produce chips at a high rate. A chip conveyer system covering the entire cast iron machining area matches the chip production with a high rate of continuous automatic chip removal. Through its use, the waste material is delivered to storage quickly and efficiently, with almost no manual effort and a minimum of attention.

The system is composed of two main conveyers and 26 feeders, covering an approximate total area of 113,600 sq ft. In this area are the main lines for machining engine blocks, heads, intake and exhaust manifolds, oil and water pumps, and other cast iron components of the Oldsmobile Rocket engine.

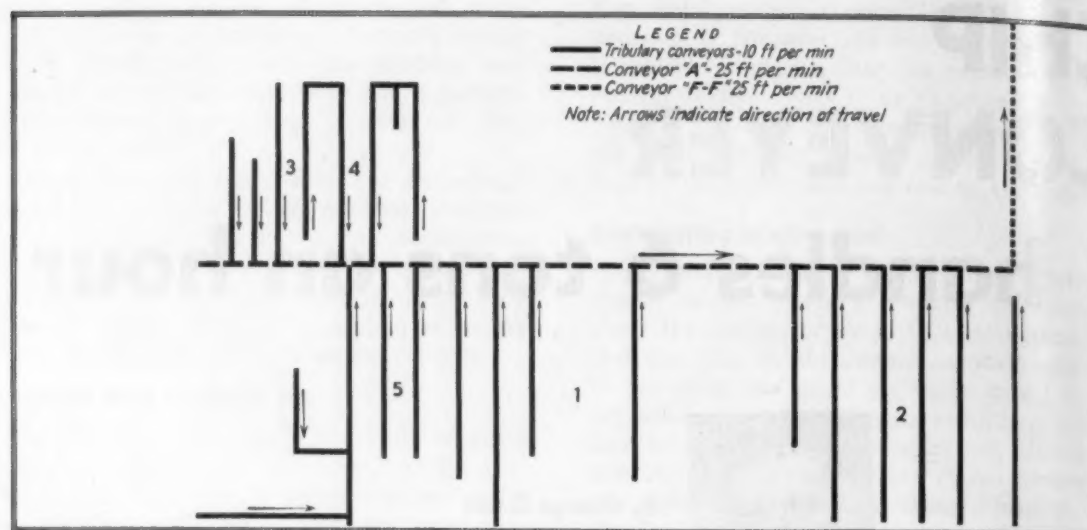
The feeder conveyers pass directly beneath the machines to be serviced, where possible, and are fed by gravity chutes from the machines. Thus with a minimum of effort on the part of the ma-

chine operator, it is easy to keep the machining areas clear of chips.

In addition to the direct feeds from machine to conveyer, the system has about 150 grated openings above the conveyers through which chips may be swept or dumped. At the present level of operations, the conveyer system is handling about 6 tons of chips per hr. The amount of labor and equipment required to collect and remove this volume of chips by conventional means would be considerable. Besides saving this labor, the conveyer system frees machine operators from any but a negligible amount of labor in keeping their own machines free of chip accumulations. And since access for trucks or carts to remove bins of chips as they are filled is not required, plant layout and operation are simpler.

To assure maximum value of the salvaged chips, supervisors and workers are instructed to see that only cast iron chips go into the system. This is not a serious problem, because very little

Chip conveyer (continued)



LAYOUT of Rocket Engine plant showing conveyers. Main components produced in numbered areas are: 1 and 2 cylinder blocks; 3, intake and exhaust manifolds; 4, cylinder block heads; and 5, front covers.



CHUTE drops chips from broaching machine directly into grating above a feeder conveyor. Many machines in plant are directly over conveyers, so chips can drop through machine base to conveyers.

fpm, and all feeders operate at 10 fpm. Each conveyor is at a greater elevation than the conveyor it feeds into. Feed from one to another is simply by gravity drop.

The main conveyers are constructed with H104 Promal refuse chain because of the need for strength due to their greater length. The shorter feeder conveyers are constructed of No. 458 rivetless chain with drag flight attachments.

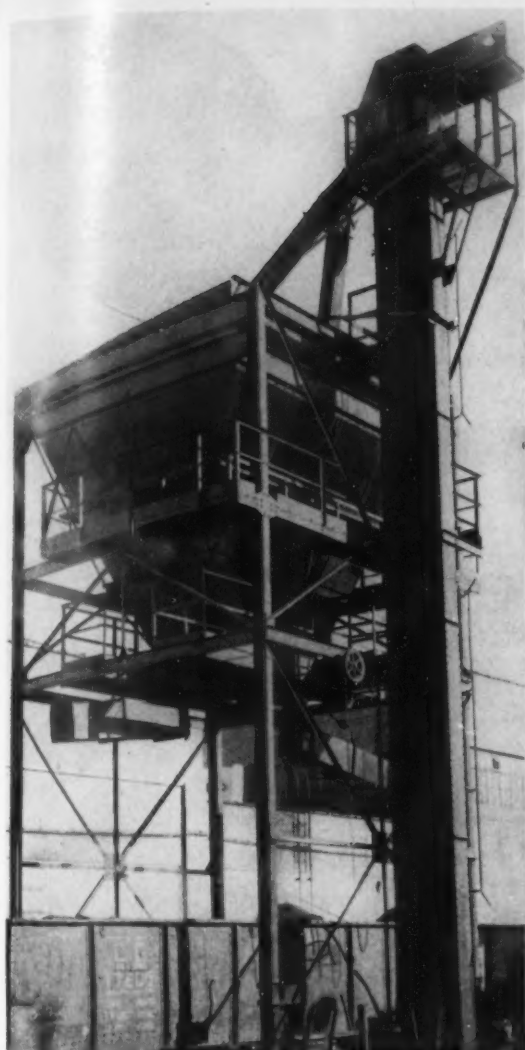
Controlled from central panel

The entire system is controlled from a central panel. There are 28 electric motors driving the system, ranging from $1\frac{1}{2}$ to 3 hp depending on the conveyor length they drive. Motors are protected from excessive duty due to overloading or possible jamming of the system by Anchor Overload devices. The setup is designed with a progressive relay system in such a manner that should a conveyor stop for any reason, all conveyers leading directly or indirectly into it would shut off automatically, without affecting the rest of the system. Should either main conveyor stop, the entire system would shut off.

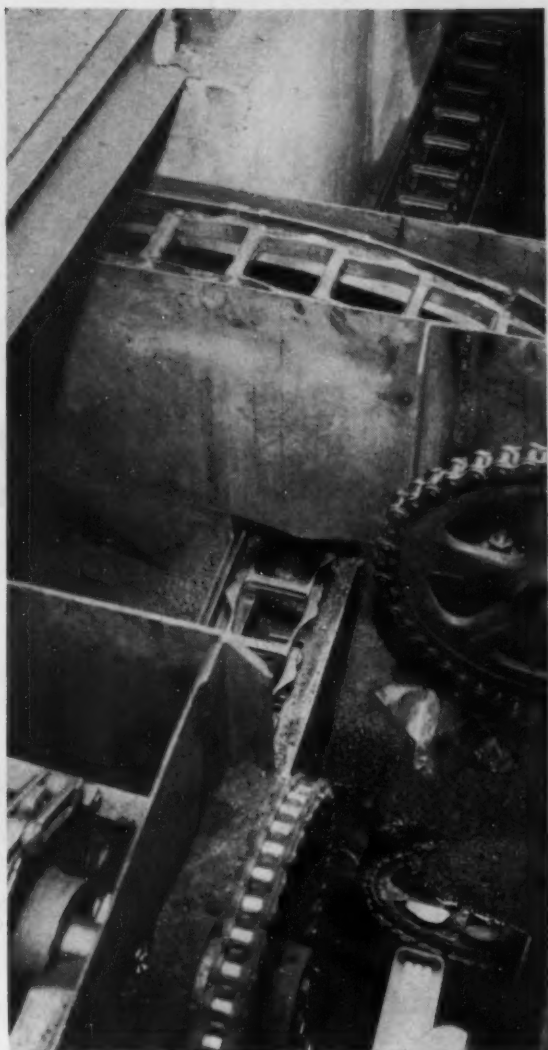
Lights on the control panel indicate when each conveyor is operating. In case any conveyor stops, an alarm bell rings to warn the operator,

machining of materials other than cast iron is carried on in the area serviced by the conveyor system.

The two main conveyers are operated at 25



ELEVATOR and hopper outside Olds plant receive chips from conveyor system, store them for loading rail cars.



JUNCTION of three conveyers in Olds system. Top is conveyor A; bottom, FF; bottom left, feeder bringing chips from transfer machines.

who then examines the lights to determine which conveyor has caused the shutdown.

The system delivers chips to a bucket elevator which lifts them 50 ft and deposits them in a storage bin above a railroad siding. Gondola cars may be run underneath and loaded with chips by gravity.

The system has been in continuous operation since September, 1949. A conveyor section similar to this system, but much smaller, has been in use elsewhere at Oldsmobile since 1938, except for a period during the war. To date service has been satisfactory and wear not excessive.

NEW BOOKS

"*Machining of Stainless Steels*," combines in brief form the pertinent data on machining of an important class of steels. Composition and general characteristics of wrought stainless steels, practical considerations in machining, tool design, and lubricants are discussed. Metal Cutting Tool Institute, 405 Lexington Ave., New York 17, N. Y. \$1.00. 27 p.

"*Cleavage Fractures of Ship Plates*," by Wilbur M. Wilson, R. A. Hechtman, and W. H. Bruckner. Factors influencing formation of cleavage fractures in ship plates were the subject of a recent investigation. Test specimen were $\frac{3}{4}$ in. steel plates with a centrally located transverse slot at midlength which served as a stress-raiser. University of Illinois, Urbana, Ill. \$1.00. 95 p.

SINGLE DRAW PRODUCES silicon-copper hemispheres



By James A. Leake
Plant Manager
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Monroe, Mich.

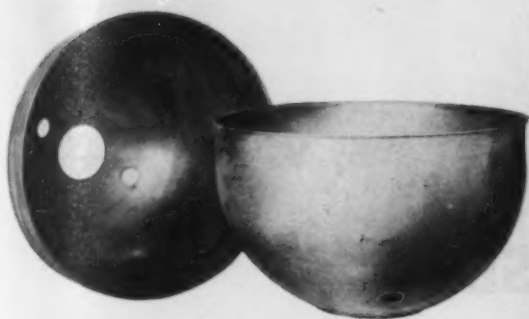
Three dies in one stroke of a large hydraulic press perform three operations required to make finished hemispheres. Yield is thus one finished piece per stroke. Formerly, three draws, interstage annealing, restrike, trim and pierce operations were required. After draw parts are stress relieved.

Hemispheres of the silicon-copper alloy are among products produced by The Leake Stamping Company, Monroe, Mich., in a single draw. The setup includes a Clearing double-acting hydraulic press equipped with three dies. Only one of these is employed for drawing, which, in the deepest size, is 13 15/16 in. deep and has a 10½-in. spherical radius. The full depth is drawn in a single stroke, the draw die being between the other two in the setup. During the same stroke, a die at the left restrikes the piece to produce a sharper radius at the flange. At the same time, a die at the right pierces holes and also trims the flange to size.

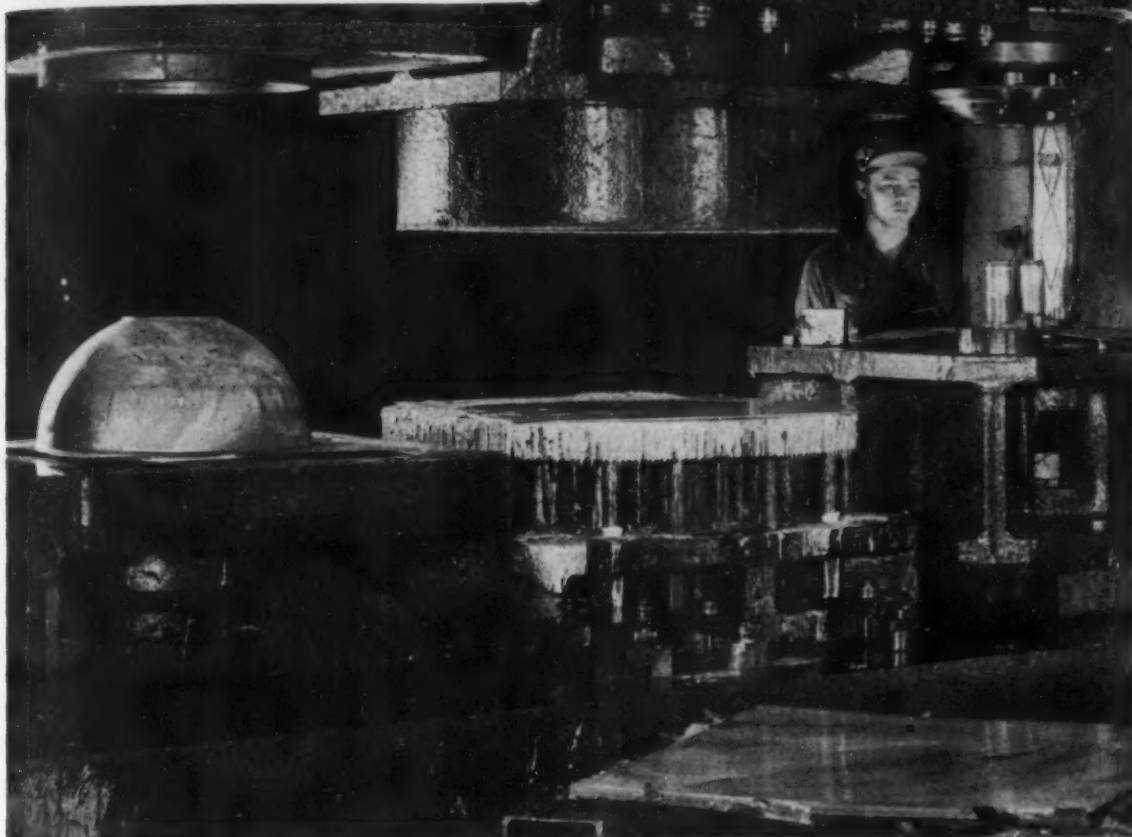
Thus, although three pieces are in process in each working stroke, one piece is finished at each such stroke. Actually, a single set of dies

having some interchangeable inserts produces hemispheres of four different types and having different depths, hole sizes, and location. All the hemispheres are of the same diameter. One size is 10½ in. deep. The others also have hemispherical bottoms but include cylindrical portions between the flange and the hemisphere itself, this accounting for the different depths of draw.

Before this setup was developed, others found it necessary to make three separate draws with annealing between to produce these parts. This, of course, slowed the job and made it much more expensive besides necessitating much extra handling and tying up extra equipment. With the present setup, there is no annealing between operations. It is necessary, as before,



PAIR OF HEMISPHERES produced in single press stroke from 0.064-in. silicon copper stock.



DOUBLE-ACTING hydraulic press used to draw hemispheres. Die at left restrikes flange radius, center die draws, right die pierces holes and trims flange. Yield is now one finished piece per stroke.

to stress relieve the stampings after they come from the press to avoid possible stress cracking at a later date.

Nominal composition of the alloy employed is 3 pct silicon, 1 pct manganese, and the remainder copper. This alloy has excellent physical properties approximating those of mild steel, and has high resistance to corrosion. These properties make the alloy well adapted for use in tanks and pressure vessels. Stock used in making the stampings is 0.064 in. thick and is purchased in the annealed condition in square blanks ranging from 31 to 34 in. depending upon the depth of draw required.

After press operations are completed, the hemispheres are transferred to a Despatch oven of 64 cu ft capacity and are heated for one hour at 780°F to effect the stress relief. Heating of this oven is controlled by a Leeds & Northrup potentiometer from thermocouples attached directly to the work. By this means, the temperature is held within a $\pm 4^\circ\text{F}$ temperature range. Finished parts are checked for hardness and stress relief and samples are tested for tensile strength. These hemispheres are excellent examples of deep drawing and have been produced in large volume with excellent records in service.

XERORADIOGRAPHY

can cut X-ray inspection costs



By M. D. Phillips



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Xeroradiography, a novel X-ray method, offers several advantages in industrial radiography. Plates are used repeatedly and are not spoiled by accidental exposure to light, X rays, or nuclear radiation. The image may be quickly developed by a simple method and transferred to ordinary paper.

When the metalworking industry swings into defense production, the use of industrial radiography as a nondestructive test increases tremendously. Radiographic inspection is insurance against service failures, or malfunctioning of vital equipment.

Xeroradiography, a novel form of radiography developed by Battelle Memorial Institute under sponsorship of The Haloid Co., offers several advantages over conventional radiographic inspection methods.

Dry pigments reveal image

The process is essentially physical. It is a dry process. No wet processing or chemical solutions are required to develop the X-ray images. Dry pigments may be used to reveal the image after X-ray exposure.

Certain materials, such as one form of selenium, are normally good insulators. When irradiated with X rays, however, they become relatively good conductors of electricity. This response to X radiation is the basis of xeroradiography.

Xeroradiography can be described simply in terms of the steps involved in producing a xeroradiograph.

1. Electrical sensitization of the xeroradiographic plate.

2. X-ray exposure of the sensitized plate.

3. Development of the exposed plate to produce a visible image.

4. Transfer of this image from the plate to another surface, as of paper, on which it is fixed to produce a permanent record.

5. "Cleaning" the original xeroradiographic plate, to remove residual electric charge and image pigments, in preparation for repeated use.

Under certain conditions, one or both of the last two steps may be omitted.

The xeroradiographic plate corresponds to the X-ray film. It consists of an electrically conductive backing material, such as a metal sheet or coated glass, the face of which is coated with a smooth layer of a suitable semi-insulator sensitive to X rays. This coating, selenium or sulfur, a nonconductor of electricity, becomes conductive when exposed to X radiation.

Selenium plates have been found most suitable so far, but many other materials are being tested.

The xeroradiographic plate must be electrically sensitized to respond to irradiation. Sen-

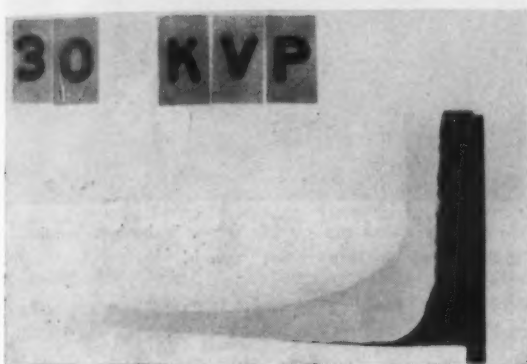
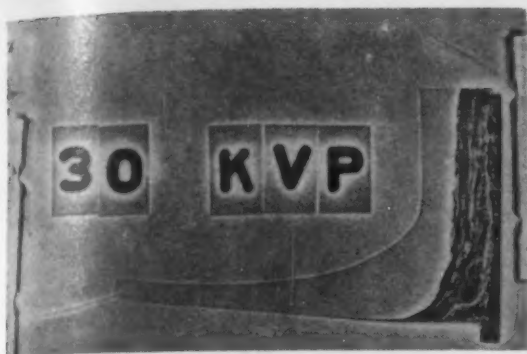


FIG. 1. Details of structure of fiber glass insert are clearly revealed in radiographs of molded plastic part. Xeroradiograph (above) was taken on selenium plate; radiograph (below) was made on Type M film.

sitization is usually achieved by passing the plate beneath fine wires held at about 7000 v potential. The corona discharge in the air surrounding the wires deposits an electrostatic charge on the plate. If not exposed to light or radiation, the sensitized plate will remain charged.

The sensitized plate is exposed to X rays, beneath the object being radiographed, just like X-ray film. Wherever X rays strike the plate, the selenium coating becomes conductive and discharges the electrostatic surface charge into the backing material.

The rate of loss of charge is a direct function of the intensity of X-ray exposure. On the places where X rays do not fall, the surface charge remains on the coating of the plate. The X-ray image pattern produces a "latent electrical image" which remains on the xeroradiographic plate.

This invisible electrical charge distribution is made visible by flowing specially-prepared dry developing powder over the xeroradiographic plate. This powder is made of two components, one a relatively coarse carrier material, and the other a finely divided pigment.

The powder is attracted to the charged portions of the plate, and adheres tenaciously. The irradiated portions of the plate, being discharged, are unable to retain the powder and

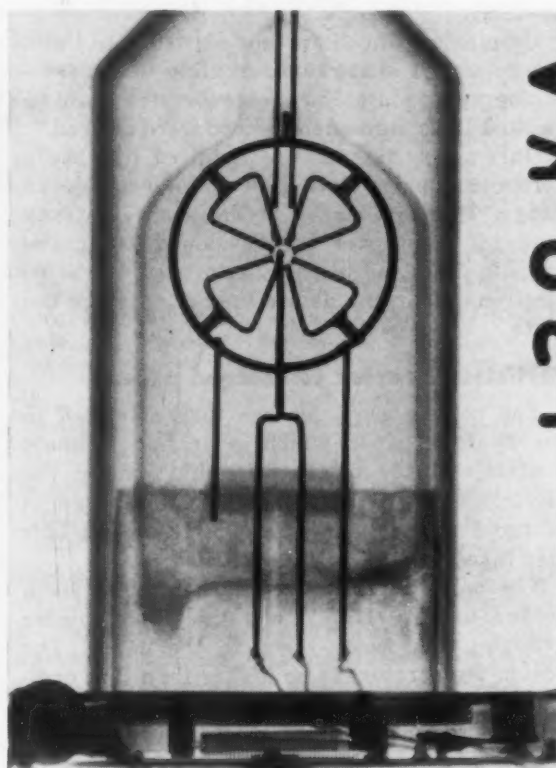
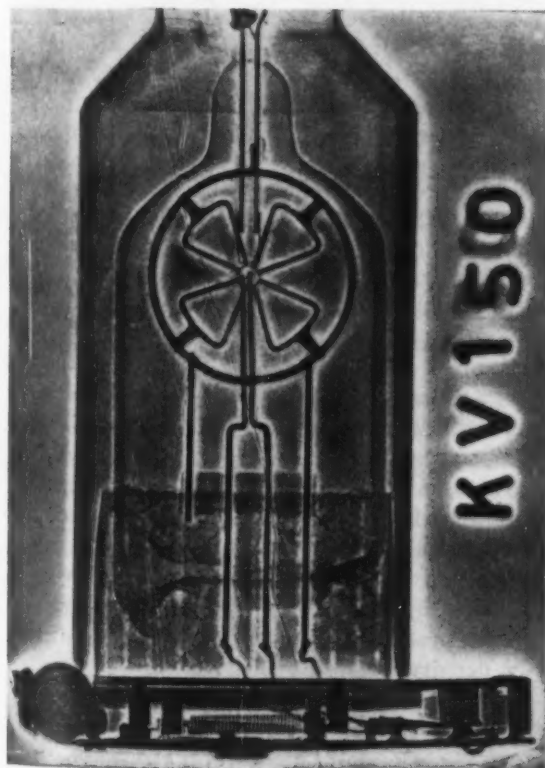


FIG. 2. Internal details of tunable magnetron assembly are more clearly defined on xeroradiograph (left) than Type M film (right). Exposure was 150 micro amp-sec with xeroradiographic plate, 600 micro amp-sec with film.

Xeroradiography (Cont.)

it rolls off. The result is a positive X-ray image of the casting or object being radiographed. This development may be carried out immediately after exposure and requires only a few seconds.

Another method of developing the "latent electrostatic image" is to place the plate in an

Some pigment remains on the plate and is removed by cascading over the plate a granular material with triboelectric properties which cause it to attract and pick up this residual pigment. If the surface of the plate does become contaminated with powder, it may be cleaned with a solvent such as carbon tetrachloride.

Xeroradiography differs from conventional



FIG. 3. Brazed fillet of steel aircraft propeller and details of internal filler wires are clearly shown in both xeroradiograph (left) and Type M film (right). Xeroradiograph plate speed is four to seven times Type M film.

environment consisting of a cloud of particles of powder. Various techniques can be used to produce the powder cloud.

Xeroradiographic images developed by these methods can be viewed directly in scattered light. With proper X-ray exposures, such images show excellent definition and contrast sensitivity. Since the image may be developed within a few seconds after exposure is completed, and by a dry process, the test objects may be evaluated from their X-ray images with no delay.

Despite continued further exposure to light, the developed image tends to cling to the xeroradiographic plate. Further processing could be omitted if no permanent record were desired.

Only a few seconds are required to make a permanent print from the cascade-developed image. This is done by laying a sheet of any kind of paper over the developed xeroradiographic plate and passing it through the same electronic charging device used to sensitize the plate.

Particles attracted to charged paper

The powder particles are then attracted to the charged paper, which is held in intimate contact with the xeroradiographic plate by the electric field. By this transfer, the image is restored to its true left-right relationship. This step takes only a few seconds.

The paper print is fixed by heating it for a second or two. Heat melts the resin powder granules and fuses them to the paper. The fusion temperature is no higher than that ordinarily used for drying or ferro-typing silver emulsion photographic prints. The printed image is as permanent as a printed page of paper, and is suitable for storage for an indefinite period without deterioration.

radiography on X-ray film in several significant features:

1. Plates may be used repeatedly for hundreds or possibly thousands of successive exposures.
2. The plate is not permanently spoiled or damaged by accidental exposure to light, X rays or gamma rays, or nuclear radiation.
3. The image may be developed immediately after exposure, by simple procedures.
4. No wet processing or liquid chemical solutions are required. The developing process is a dry process relatively insensitive to normal changes in temperatures and humidity.
5. Images may be readily transferred to ordinary paper with cascade development and resinous pigments, or to specially prepared paper by other methods. Paper and pigment are the only supplies used up in the processing.
6. The image may be processed to accentuate local contrast at discontinuities and boundaries.

Xeroradiographic plates, materials, equipment, and techniques have been subjected to extensive tests throughout a wide range of X-ray voltages and exposure times. The tests were made with crude portable laboratory equipment.

Tests completed to date have been planned to establish electrical response characteristics of xeroradiographic plates. For comparative evaluation, the images were developed by simplified techniques and with a gray powder. The images produced were of low density and narrow density range.

Despite these limitations, initial tests showed that, with proper exposure, contrast sensitivities of 2 pct could be obtained throughout a wide range of materials and thicknesses. The following are a few of the xeroradiographs and

comparison radiographs made during the tests.

A molded plastic part with a fiber glass insert was radiographed at 30 kvp, 36 in. source-object distance (sod), without filters. A 50-kvp X-ray unit was used in an exposure of 560 micro amp-sec on Type M film, and an exposure of 188 micro amp-sec on a 50-micron selenium xeroradiographic plate (Fig. 1). Full details of the fiber structure were revealed clearly in both images.

A tunable magnetron assembly, including internal springs, wires, screws and glass envelopes, was radiographed on a 250-kvp industrial X-ray unit without filters, at 150 kvp, 7-ft sod, in 600 micro amp-sec on X-ray film, and 150 micro amp-sec on a xeroradiographic plate (Fig. 2). The details of certain hidden section boundaries were enhanced by local contrast sensitivity in the xeroradiograph, which showed all features visible in the film radiograph.

A brazed joint in a steel aircraft propeller blade was radiographed on a 250-kvp industrial X-ray unit at 160 kvp, 36-in. sod, in 600 micro amp-sec on Type M film, and in 200 micro amp-sec on the new type plate (Fig. 3). The contours of the brazed fillet, as well as details of internal filler wires, were clearly revealed in both radiographs.

A 1-in.-thick steel plate, with 0.030 in. and 0.060 in. steel penetrameters on the source side, was radiographed on a 2000-kvp industrial X-ray unit at 2000 kvp, 36-in. sod. During the exposure, 52 sec with 57 micro amp beam cur-

rent, the monitoring thimble recorded 3.05 hr.

A 10-mil lead intensifying screen (backed with fiber glass) was placed in close contact with the semiconducting film of the xeroradiographic plate. With this arrangement, the penetrameters were clearly revealed, although the density range in the print was decidedly small.

Tests have shown the semiconducting films used in xeroradiographic plates respond by useful changes in electrical resistance to irradiation by X rays from sources rated 5 kvp to 10,000 kvp and from radium. Exposures in the time range from several seconds to 18 hr are feasible.

Faster than Type M film

Contrast sensitivities of 2 pct are attainable with aluminum alloys in the range $\frac{1}{2}$ to 2 in. thick, and with ferrous alloys in the range of 1 in. in thickness. Definition probably can exceed 500 lines to the inch.

The speed of xeroradiographic plates is four to seven times that of Type M X-ray film in the range of 5 kvp to 100 kvp. This relative speed decreases at the much higher kvp values (1 million to 10 million volts), when used without screens.

As with films, the use of lead intensifying screens and filters improves the apparent speed and contrast sensitivity under high kvp exposure conditions. The speed and contrast sensitivity attainable with xeroradiography appear to be generally comparable to those obtained with commercial X-ray films.

New technique cuts heat damage in tool grinding

OPTICAL pyrometer checks show that the Cool Grinding technique developed by the DoAll Co. can lower actual cutting temperatures in tool grinding by as much as 600°F.

Much physical damage occurs when tools are improperly ground. Usually, this consists of cracking and/or skin softening. Almost always this damage requires laboratory inspection to determine the extent of harm done. Many tools may have near-perfect finish, dimension and flatness, when given a visual inspection.

In every case, the damage is caused by one factor—too much heat generated between the grinding wheel and the workpiece.

Minute surface cracks provide a starting point which may eventually grow until a die or other tool actually breaks while in use. Sometimes the breakage might even occur when the die is at rest on a shelf. In some cases the breakage happens immediately, as any grinder hand can attest who has had the experience of

grinding a die, removing it from the grinder and finding to his surprise that while he placed only one piece on the chuck, there are now two pieces.

With DoAll's new Cool Grinding technique the coolant is carried directly through the wheel so each cutting particle is thoroughly saturated. In grinding, just as in any machining operation, increased production and longer tool life are obtained if the cutting tools are cooled. Each abrasive grain is an individual tool and if it receives a constant flow of coolant, it cuts faster, lasts longer, and produces a better surface. In feeding the coolant through the wheel, centrifugal force provides the power, atomizing the solution and flushing the wheel to prevent loading and glazing.

Cool Grinding requires no special wheels, all of the ordinary vitreous-bonded wheels being sufficiently porous to permit the flow of coolant.

BIG GRINDER

Finishes

large

precision bearings

By George Elwers
Machinery Editor

This heavy-duty precision grinder finishes surfaces and races of ball and roller bearings up to 150 in. diam. Accuracy within 0.0002 in. is possible at maximum swing. Two swiveling heads make possible surface grinding, angle grinding and form grinding. Large bearings are important in tanks, ships and machine tools.

Big double-head precision grinding machines, with up to 150-in. swing range, are key machines in the defense program. Their primary defense use is in the manufacture of large diameter ball and roller bearings for such applications as tank turrets, Naval gun mounts, and large machine tools.

A primary source for such large bearings has been Kaydon Engineering, Inc., Muskegon, Mich. For grinding the races of large bearings, Kaydon uses the grinder designed by its board chairman, A. Harold Frauenthal. Now, demands for large bearings have risen beyond Kaydon's ability to keep up. Other bearing manufacturers, and some defense contractors who need these bearings for their war products, are going into their manufacture. To supply them with grinders, A. Harold Frauenthal, Inc., has been set up as a new machine tool company and has built a plant in Muskegon.

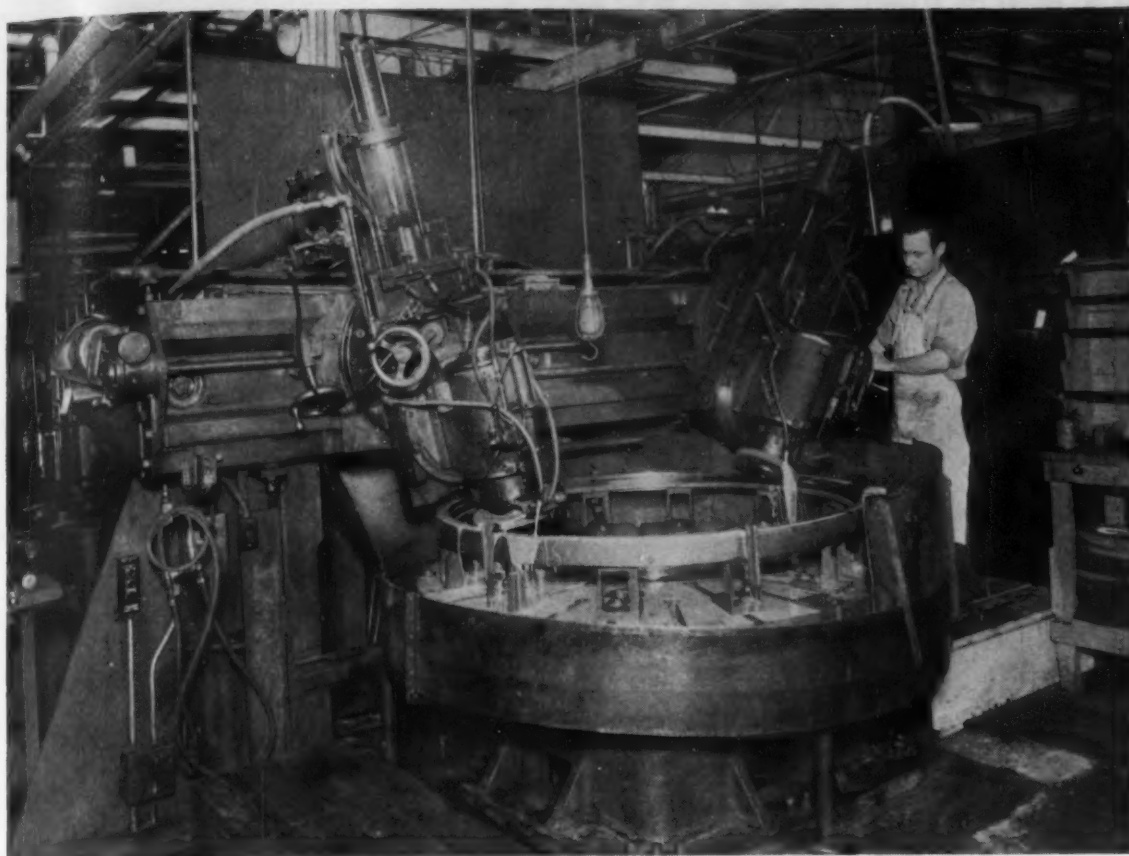
Ordinarily, large diameter grinding, except surface grinding, is done on boring mills fitted with grinding attachments. But Kaydon found such rigs do not have the accuracy required for

bearing work. This wasn't too important when large bearings were used in small quantities, since they could be scraped or stoned to fit during assembly. This was done with Navy gun mount bearings until shipbuilding volume soared in World War II.

Time lost in fitting bearings

But as the quantity of large bearings needed went up, the time lost in individual fitting of bearings became more serious. So Frauenthal built a machine designed from the base up especially for precision internal, external and surface grinding on large diameters.

Tolerances, due to required fire-control accuracy, were extremely close. When the 40-mm Bofors gun began to be produced in quantity for the Navy, it became apparent that there were not enough skilled hand scrapers in the country to hand fit them all. Original use of Frauenthal grinders permitted grinding to a 0.0005-in. accuracy, which eliminated much hand scraping but still required selective fitting. Later, these grinders were used to produce parts to 0.0002-in.



HEAVY-DUTY precision grinder in use at Kaydon Engineering grinding races for large roller bearing. Grinder is accurate within 0.0002 in. at maximum swing of 150 in.

tolerance, which made parts interchangeable as well as eliminating hand scraping.

Typical large bearing races are made from rough formed hot rolled or forged rings, and machined to grinding size on boring mills. After machining and inspection, these rings are hardened and drawn.

Hardening of such large diameter relatively thin rings presents difficult problems. Kaydon utilizes a special deep flame hardening technique to control size, hardness, warpage and depth of hardness accurately.

Precision parts simplify assembly

Finally, to insure accuracy and ease in assembling as well as proper performance of the finished product, the bearing parts are ground to precision tolerances. For the final grinding on the ring faces as well as on the ball or roller path, the heavy duty precision grinder is used.

The Frauenthal grinder has a swing range up to 150 in. diam, and can consistently grind diameters and parallel faces to a tolerance of 0.0002 in. at their maximum swing.

The table, spindle and main spindle housing of the grinder are an integral unit, designed for maximum rigidity. The top bearing, which carries the load, is an oversize superprecision double-row tapered roller bearing, while the lower aligning bearing is an oversize superprec-

sion double-row straight roller bearing. Adjustment is provided to give each bearing a pre-load. The aligning bearing is designed so that expansion or contraction of the housing or spindle does not affect the load or accuracy of either bearing. These are Kaydon bearings.

The table drive is a self-contained unit, infinitely variable within its range.

Vibration and chatter are held to a minimum by making the machine's superstructure a completely separate unit from the table-spindle unit, on a separate foundation. The superstructure consists of two columns and a fixed cross rail. On this cross rail is mounted an adjustable cross rail which carries the vertical and horizontal slides for each of the machine's two compounds. The grinding heads can be independently swiveled to permit angle grinding. In the accompanying illustration, grinding is being done on two different angles at once. This rail is adjustable for grinding various tapers or angles, and for compensating for wear or misalignment.

Horizontal and vertical feed is accomplished by feed screws. Horizontal and vertical actuators, operating either automatically or manually as desired, are employed for oscillating the grinding spindle head. These machines are equipped with hydraulically-operated wheel dressers for each head. These permit grinding of various precision forms and ball paths within very close limits.

VALVE BODIES

speedily machined to

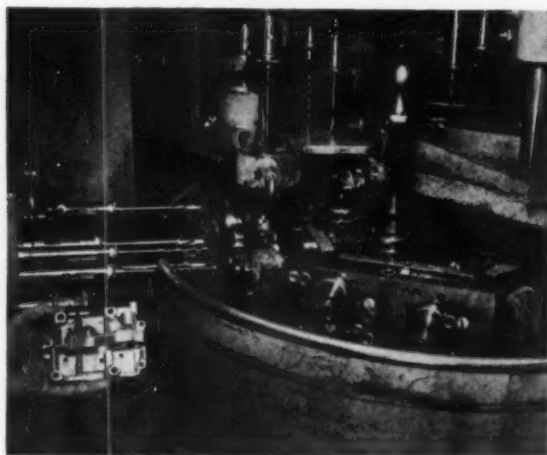
CLOSE TOLERANCES



By Herbert Chase
Consultant
Forest Hills, N. Y.

Unusual and high precision machining operations are required in making Ford automatic transmission valve bodies and impeller covers. One precision boring machine uses reamers on long holes of small diameter. Microflat machine gives blue-block flatness in 5 sec per piece. Peanut shells are used for deburring.

Control of the new Ford automatic transmission depends largely upon steel slide valves that move in mating bores of control bodies. Complex coring is necessary in these diecast aluminum alloy bodies. Although valve holes are



DRILLING, REAMING and tapping are performed in this Buhr machine on upper valve. Fixtures index the work.

cored, holes must be precisely machined to prevent leaks under high pressures.

A special department has been set up at the new Ford plant in Cincinnati, to handle machining of valve bodies and other diecastings.

Most machines hold two or more castings. Several have duplicate fixtures and some hold the workpiece in different positions for successive operations. In most cases, clamping is by hydraulic or air pressure.

The initial operation calls for facing the lower valve body casting on both sides. Two castings are machined simultaneously in a Heald machine having two spindles at each end. After one side of each casting is faced, the fixture moves automatically and the opposite sides are faced. Thickness is held to 1.312 to 1.316-in. limits. These operations insure parallel faces.

Two holes drilled near opposite corners of one face serve as location holes for clampings. Many of the drilling, reaming and tapping operations on this and the mating upper valve housing are done in Buhr machines. Several such machines feed tools in from two or more directions. Often jigs include tool guide bushings.

For holes, parallel to lower housing faces, a

THREE CASTINGS are set up in Heald boring machine for boring operation. Each spindle has different tooling.

12-station fixture is used. Loading is done at the front station. The piece is automatically indexed through 11 stations. Tools feed in from both sides and, in one case, down from the top.

A precision boring job is done by double-end Heald machine equipped with a fixture to hold three castings with faces horizontal. Three holes, one in each casting, are bored. The fixture reverses and is fed into three boring tools. Tools are single point type but groups in some holders bore three step diameters. Castings move to three positions. Tooling is not duplicated on any spindles.

Use Heald machine for reaming

An unusual setup uses a Heald machine for reaming instead of boring. Originally, this machine was intended for boring the holes with single-point tools. Holes were so small, however, that the tiny tools could not be set to bore to specified dimensions. Reamers were tried because they could be reground without altering the size of hole produced.

Two pairs of castings are set up for reaming. Eight holes are reamed. The castings of each pair are interchanged, and tools are advanced again. The result is four parallel and closely sized holes in each piece. The floating type reamers are piloted at both sides of the workpiece. Pilot bushings rotate with the reamers and are lubricated in mating fixture holes. All reamers have carbide inserts.

Air fixture clamps work

Lower valve housings require that one end be machined at right angles to the two faces machined parallel initially. This work is done in an Excello machine, equipped with a two-plate air-operated fixture. This fixture clamps the workpieces against faces previously machined and so that these faces are parallel to the spindle axes. Then the workpieces are fed across two facing tools that produce the square end faces.

Many bored or reamed holes within fractional thousandth dimensions are quickly checked by air gages.

To meet the high specifications for flatness of



GROUND PEANUT shells are air blasted against valve parts to remove fine burrs. Parts move through machine on drum.

Valve bodies (continued)



MICROFLAT MACHINE hones valve faces flat. Castings and lap are rotated. Rubber pad protects parts.

valve faces, machined castings are put through the Microflat machine. Sixteen castings are held under pressure cushioned by rubber pads. Carrier rings are attached to the head and pressure cushioned by rubber pads. Carrier rings are attached to the head and oscillate the work across the segmented, bonded abrasive honing wheel, which rotates counter-clockwise. Workpieces ro-

tate clockwise. This gives "blue-block" flatness in an average of 5 sec per piece.

As valve bodies make such close fits with valves, careful deburring is essential. Blasting with ground peanut shucks has proved effective and does not injure machined surfaces. Castings are carried into the blast chamber on a slowly rotating wheel. The blast from two nozzles, removes most burrs. Special lighting aids operators to see into holes and spot remaining burrs quickly.

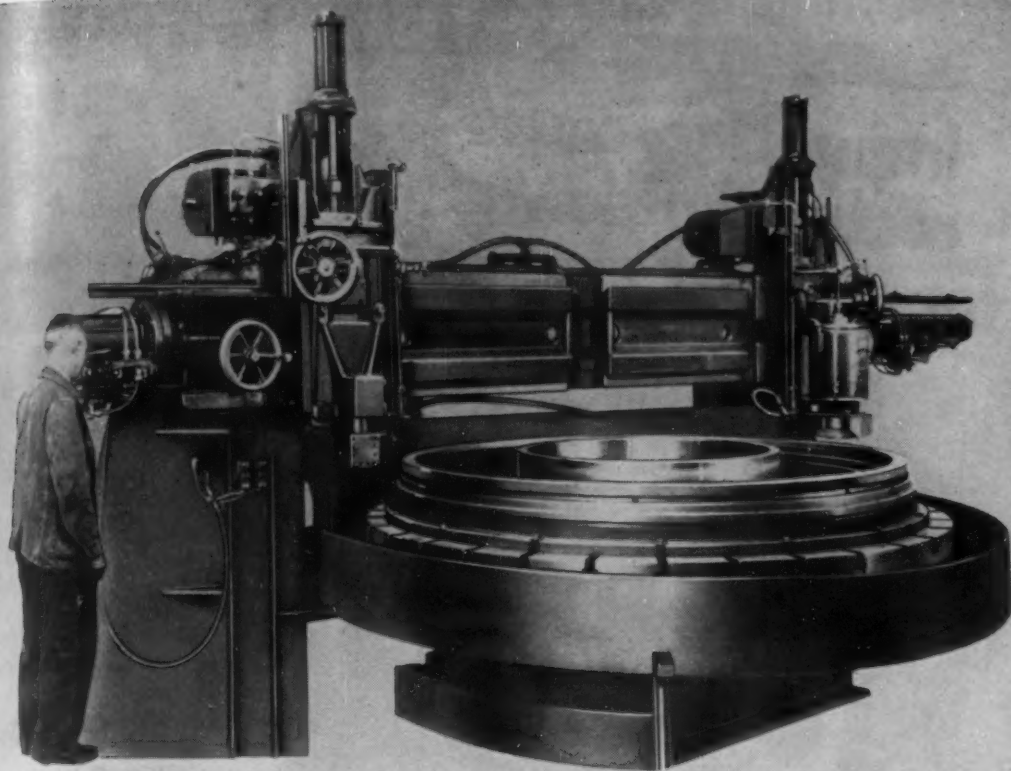
Another aluminum casting, a torque converter housing, is completely machined in a single set-up. A special 4-station indexing Hoern & Dilts vertical chucker is used. Each workpiece is mounted in a special chuck with the under side of its flange resting on pins. After being clamped and indexed to the first work station (at which the chuck does not rotate), eight 9/23-in. holes are produced with high-speed steel fast spiral drills. All cuts are made dry but drills are cooled by air jets from holes in a ring lowered inside the casting.

At the next station, the chuck is rotated at 800 rpm while several cuts are made on the flange and on the central boss at the bottom of the workpiece. One tool also cuts a circumferential slot half way down the inner wall diameter. All tools feed withdrawn automatically. At the second and third work stations the tools follow cams.

At the third and final machining station, cuts include grooving the flange face, finish turning its OD, machining the 2.005 to 1.995-in. radius that joins side walls with the bottom and finishing a step bore in the base. Burrs are removed by blasting or by hand.



IMPELLER COVERS are drilled, faced and honed on a 4-station Hoern and Dilts vertical chucker.



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Precision standards normally considered impossible for extremely large parts, were made possible through the development of Frauenthal Grinders in 1942. They grind diameters and parallelism of faces consistently to the close tolerance of .0002". They produce angular accuracy (in flatness, squareness, concentricity and taper) with less than .0005" in 72". Heads are available for adapting these

versatile grinders also to light precision boring and turning. Performance-proved in actual service since 1942, these super-precision grinders provide the accuracy vital to big gun-mounts, ordnance and aircraft equipment; bearings and parts up to 140" diameter; heavy-duty oil-field machinery; steel mill, paper mill, chemical, road-building machinery; hoists, crushers and other big industrial equipment.



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Continued

Foundry service booklet

Useful data on the products and people of Lebanon Steel Foundry, with a summarization of manufacturing facilities, are included in a new pamphlet. The booklet is intended as a quick reference source of information for those visiting the plant. *Lebanon Steel Foundry*. For free copy insert No. 14 on postcard, p. 181.

Live centers

A powerful spring controls all end thrust in Bultool live centers. The six basic styles have roller bearings to assure sustained accuracy with heavy loads, deep cuts, at high speeds and feeds. How these trouble-free live centers can reduce costs and boost production is described in a new leaflet. *Bul-tool Sales Co.*

For free copy insert No. 15 on postcard, p. 181.

Welding equipment

A new 64-p. catalog of welding and cutting equipment presents within one booklet the broad range of gas welding equipment. The wealth of engineering and technical details included make the catalog a must for gas welders. *Victor Equipment Co.*

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Tracer control

A new 64-p. idea book, "Applications of Tracer Control," presents data of this increasingly important control method of machining. One remarkable example described is the engraving by tracer control of the complete Lord's Prayer on the head of a pin within a circle 0.005 in. in diam. *George Gorton Machine Co.*

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Abrasives

Industrial abrasives in their many forms, are illustrated and described in a new 26-p. catalog. A handy, comparison chart analyzes abrasive materials, their bonds, the uses to which they may be put and machine speeds for best operation. *Bay State Abrasive Products Co.*

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Turn Page

SAVE SHOP LABOR SHOP TIME GRINDING COSTS



GROUND and POLISHED

STRESSPROOF PROVIDES

4 QUALITIES IN 1 BAR

1. Eliminates Heat Treating

Its *in-the-bar* strength, as received, is twice as great as ordinary cold-finished steel shafting.

2. Eliminates Case Hardening

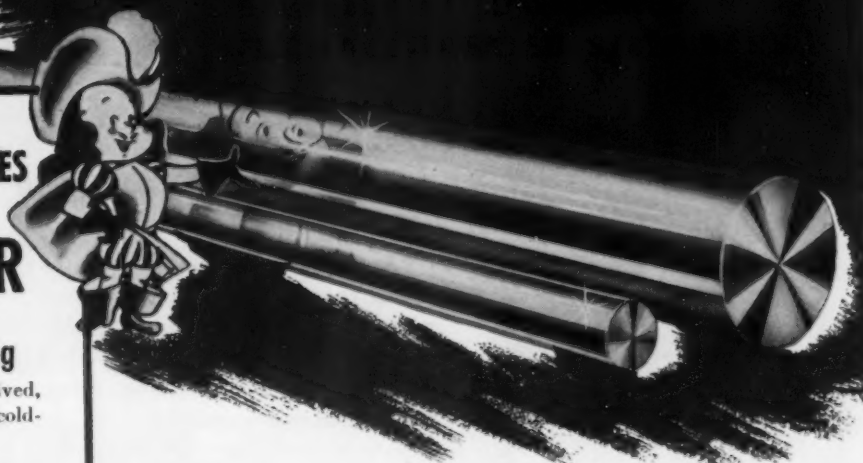
Its resistance to wear, as machined, is sufficient to replace many heat-treated or carburized steels.

3. Minimizes Warpage

Because it is *stress-relieved*, this superior bar assures the user a minimum of distortion.

4. Speeds Up Machining

Has *in-the-bar* machinability fully 50% better than heat-treated alloys of the same hardness.



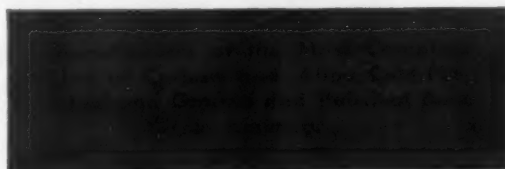
Many companies are realizing important savings by using Ground and Polished STRESSPROOF bars instead of grinding the steel in their own shop. For this superior steel provides precision tolerances at a reasonable cost, without tying up valuable labor and machinery.

This all-purpose bar stock is ground to close tolerance and highly polished at the LaSalle plant on batteries of modern machines — at lower cost than you can grind it yourself. Furthermore, because this versatile steel is stress-relieved, it requires no straightening after keyseating, journaling, threading, or other machining operations. And its four qualities in-the-bar eliminate many other costly operations.

Almost all of today's Ground and Polished STRESSPROOF production is going into defense jobs. However, from time to time, some sizes of sample bars may be available for testing purposes.

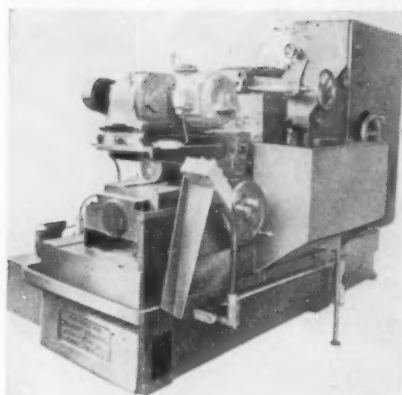
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NEW equipment

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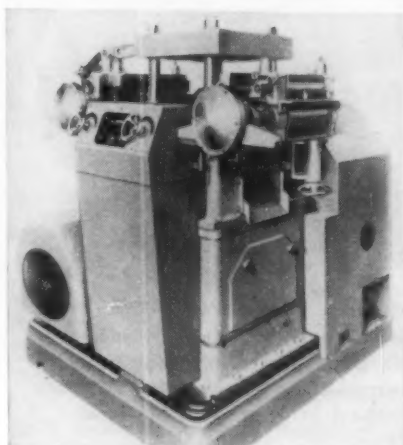


Centerless grinder uses abrasive belts

A heavy duty machine capable of removing large amounts of materials at fast feeding speeds and maintaining close tolerances uses abrasive belts in place of hard wheels for both cutting and feeding members. The feed belt maintains constant contact with the work at all feeding angles and eliminates the need of dressing when either the feeding angle or size of work is changed. This feature re-

duces setup time to a minimum. The cutting belt is 9 in. wide x 168 in. long and runs over contact wheel and idler pulleys in a triangular arrangement, reducing floor space requirements. The machine has a capacity of $\frac{1}{4}$ to 6 in. and handles various types of work by the in-feed or thoroughfeed method. Work guides and fixtures permit long bar grinding. *Production Machine Co.*

For more data insert No. 19 on postcard, p. 101



Dieing press produces 18,000 parts per hr

Manufactured in England by the CVA Group, a heavy duty 50-ton dieing press features variable speed motor, improved roll feed, magnetic clutch and brake unit and all-steel cabinet. Its reciprocating cross-head unit is counter-balanced by pneumatic cylinders. Air pressure is adjustable to ensure correct balancing for varying loads and speeds. One set of pushbuttons controls starting, stopping and inching of the variable speed motor. Push-

buttons duplicated to the right operate single, stop and repeat stroke action. The press has extreme rigidity, low center of gravity, and the most modern actuating mechanism, enabling high speeds to be used with a marked absence of vibration. Speed is infinitely variable. Feeding is easily and accurately set and automatic double roll feeds are provided. *British Industries Corp.*

For more data insert No. 20 on postcard, p. 101



Comparator measures radial play of bearings

A comparator for measuring the radial play of ball bearings is intended for gaging small precision instrument-type bearings. With interchangeable tooling it will handle bearings from $\frac{3}{32}$ to $\frac{1}{2}$ in. bore. Its C-shaped subassembly is fitted with an arbor that holds the bearing vertically and securely by its inner ring so that the outer ring is free to move according to the amount of radial play. An Electro-limit gage head attached to the

upper portion of the frame has a gaging spindle that presses ring to down position with all clearance at the bottom. At this point the first reading is taken. A second reading is taken by tilting the C-frame so that all clearance is at the top of the ring. Difference between the two readings is radial clearance in the bearing assembly. *Pratt & Whitney, Div. Niles-Bement Pond Co.*

For more data insert No. 21 on postcard, p. 101
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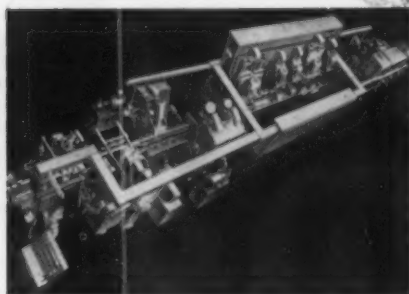
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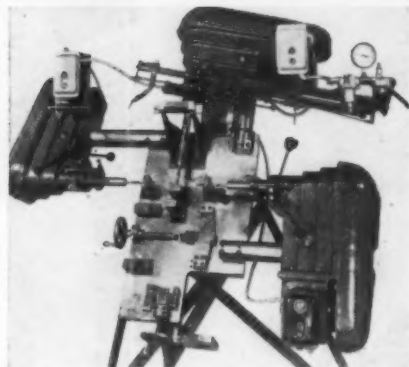


Transfer machine processes intake manifolds

Seventy-two intake manifolds of V-type engine blocks can be processed per hr at 80 pct efficiency, on a 22-station, inline transfer type special machine. The machine drills, taps, reams and spot faces all holes and mills the carburetor and water outlet pad. Loading is manual and controls are automatic

in normal use. The workpiece is hydraulically located and clamped at each station and is moved between stations by a hydraulically operated transfer bar. Speeds are 80 sfpm for drilling; 250 sfpm for milling. *Snyder Tool & Engineering Co.*

For more data insert No. 22 on postcard, p. 101

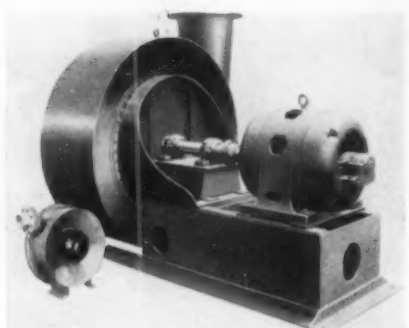


Flexible design permits simultaneous machining

An example of flexibility possible in designing machines to bring drilling and tapping tools to the work in angular and inverted positions for simultaneous machining in a single handling of a part or assembly is illustrated in this triple drilling unit. Three universal five-speed heads are shown ready for the application of automatic and semi-automatic pneu-

matic feeding devices. Standardization has resulted in unit prices that cut usual custom-built special purpose machine costs. *Boice-Crane* factory engineers collaborate with manufacturers in adapting these heads to special drilling, tapping and machining needs. *Boice-Crane Co.*

For more data insert No. 23 on postcard, p. 101



Steel blowers have larger-than-ever capacity

Standard models in a new line of fabricated steel blowers range up to 200 hp. Latest steel cutting and continuous welding methods have made the new designs possible. In addition to larger size, the line offers weight saving and space economy. Durability, simplicity and efficiency are preserved. Three styles are offered: multi-stage and

single stage operating at 3500 rpm; model ST operating at 1750 rpm. Outlet pipe sizes range from 4 to 24 in.—all flange fitted. Blower outlets may be oriented in any of 14 positions depending upon the desired discharge angle and offset. *Billmyre Blower Div., Lamson Corp.*

For more data insert No. 24 on postcard, p. 101

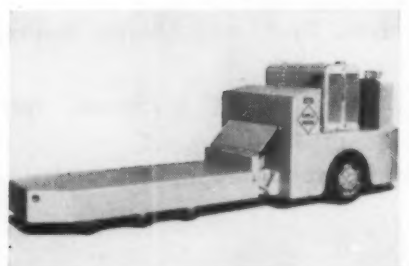


Oven bakes different materials at same time

Ovens used on or close to the production line or machines speed up production and cut handling costs where parts or materials require preheating, drying or baking. A new portable electric oven has eight drawers that permit baking of different materials at the same time or materials inserted at intervals.

High temperature magnesium strip heaters provide efficient heating. Temperature is thermostat-controlled and is adjustable to 325°F. Forced circulation is by fan driven by an electric motor. Ovens can be used in a group or stacked. *Grieve-Hendry Co., Inc.*

For more data insert No. 25 on postcard, p. 101



Self-loading truck transports 40,000-lb loads

The truck derives its self-loading feature from the fact that the load platform when positioned beneath the load can be raised hydraulically to lift the load off the floor for transport. It is not designed for tiering or stacking operations, its

principal function being that of horizontal transportation. Platform measures 96 in. long x 41 in. wide x 17½ in. high in lowered position; has 6-in. platform lift. *Elwell-Parker Electric Co.*

For more data insert No. 26 on postcard, p. 101

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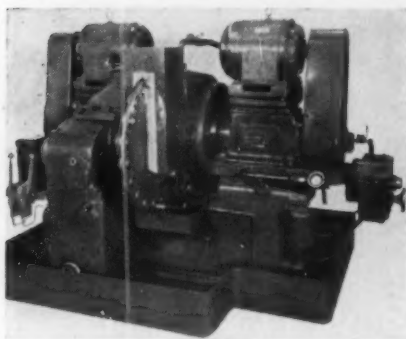
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Grinder finishes bearing roller ends

A double spindle arrangement on grinding equipment developed for the finishing of anti-friction bearing roller ends permits grinding both ends in one operation. The grinder's heavy cast iron base supports heads on dovetailed slides mounted on ball bearing ways. Heads may be pivoted to the correct angle for best grinding results. Each of two 4-in. grinding

spindles carries a heavy duty abrasive disk. A rotary attachment drives the rotary work carrier at variable speeds within a ratio of 3:1. Rotary carriers are interchangeable, permitting a variety of sizes of anti-friction bearing rollers to be ground. Parts are loaded manually; unloaded automatically. *Gardner Machine Co.*

For more data insert No. 27 on postcard, p. 181

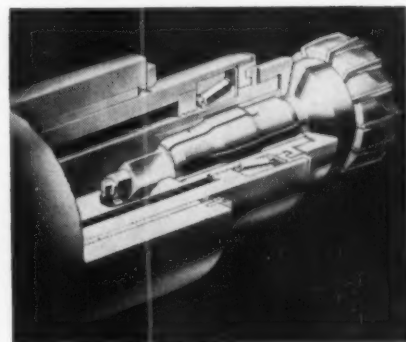


Hydraulic cutter solves dismantling operation

Dismantling of an explosion-wrecked plant presented a serious problem in the removal of bent and twisted 3/4-in. reinforcing rods, until a portable hydraulic cutter was brought to the job. Due to presence of inflammable fumes in the plant, a cutting torch could not be used. The hydraulic cutter is lightweight, readily portable, and

contains no components capable of igniting combustible vapors. The Guillotine is available with power-operated hydraulic pumps, but a hand-actuated hydraulic pump supplying 45,000 lb thrust to the cutter was selected for the job. *Manco Mfg. Co.*

For more data insert No. 28 on postcard, p. 181



Cutter driving device permits pre-setting tools

Known as the Cross-Drive, a new arrangement features quick changing, pre-set cutters, and a spindle drive that holds the cutter rigidly and precisely. Cutters can be changed in less than a minute. The worn cutter is removed by sliding it out of the spindle after loosening a large lock nut. A new pre-set cutter is then inserted. Adjust-

ments can be made while the machine is running. There is no need for trial cuts in the machine since the cutter length is pre-set to a dial indicator reading within 0.0005 in. Device is adaptable to a variety of cutters. Shank sizes have been standardized in diameters of 1 1/2, 2 and 2 1/2 in. *Cross Co.*

For more data insert No. 29 on postcard, p. 181

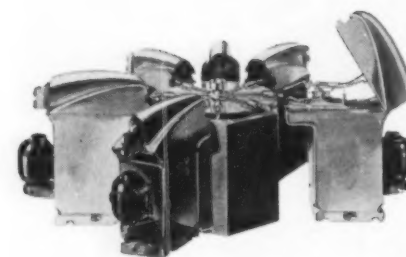


Electrode tip dresser features floating blade

Dressing straight or tapered electrodes in seconds is possible with a new flush type tip dresser. Electrodes need not be removed from the welder. The dresser fits flush with the dressing tool or can be used with most power tools such as lathes, right angle drills and drill presses with a 3/8-24 threaded

extension. Special sizes are available. Overall height is only 3/4 in. The blade floats in the chuck body providing uniform cutting action on both edges and correct centering of the electrode as the tip is reshaped. *C. O. Porter Machinery Co.*

For more data insert No. 30 on postcard, p. 181



Precision-polishing process finishes jet blades

The new Micro-Lap process and equipment have been developed especially for the fast, accurate and economical micro-surfacing of jet engine blades and buckets but has a wide range of other applications. Installations for jet blades are eight station, hydraulically indexed

units. Additional or fewer stations may be had as required. Heads are mounted on floor bases and operate continuously with no pause for indexing. Heads apply a longitudinal polishing action. *Murray-Way Corp.*

For more data insert No. 31 on postcard, p. 181

Mill Demand Strong Despite High Price Collapse

Post mortem shows gray market's back was broken by natural causes . . . Pressure on mills continues . . . Stainless market confused by inequities . . . Ingot operating rate rises again.

Washington's flair for investigation never fails to produce a good show for the public. As an attention getter a Congressional expose is unsurpassed because it is sensational and dramatic. But there's always danger that it will fall flat with the critics—that its highest notes will turn sour. That's what happened in Chicago last week where a Senate subcommittee turned the national spotlight on steel gray market daisy chains at the very time they were falling apart for lack of buyers.

Those who follow the steel market closely had known for a good many weeks that the gray market was losing its zip. That fact has been noted in this column several times. The testimony in Chicago merely provided evidence for a "coroner's verdict" that the gray market's back had been broken "from natural causes."

Prices Drop—Brokers and distributors told how sheet prices have dropped from \$20.75 per 100 lb to around \$8 per 100 lb. Coinciding with the break in gray market prices has been the increase in offerings of steel surpluses by manufacturers. In recent weeks several companies have offered tonnages at prices ranging from \$7.85 to \$10.50 per 100 lb. These are a far cry from the "penny a gauge" prices heard not so long ago.

Government production limitations and price controls have made premium prices unattractive. Added to these factors is the increasing steel ingot production (about 105.1 million net tons this year) and the catching up of steel inventories by some firms.

Mill Demand Strong—But the collapse of the gray market and flat-rolled conversion business has not affected demand at the mill level. All mills contacted by IRON AGE editors reported pressure is still strong—even for sheets and strip.

The plate situation is so tight that National Production Authority is canvassing all mills to find out what tonnage of plate conversion they can handle. In setting up allocations NPA defined plates as 0.250 in. and thicker, compared with 0.230 in. in industrial classification. Though efforts are being made to compromise the difference, tonnages aren't being increased. Consumers are being told to make up the difference in conversion.

Boron Climbs — Along with plates, shell steel, hot-rolled bars and forging bars top the list of scarce items. Forging bars are especially tough because defense demands take a high portion of them, and shortages of alloys and hot-top capacity make it difficult to boost production rapidly.

Boron steel output is climbing steadily. Estimates indicate 30,000 to 40,000 tons of boron-containing steel were made during October. Higher output is due during the next several months, though it will still be lower than had been expected.

Confused — The stainless steel outlook is confusing to producers, consumers and allocators alike. Several mills are out looking for stainless orders. Apparently, steel users with CMP tickets aren't using them, and buyers needing

stainless can't get the necessary tickets. This might result in a substantial reduction in stainless melt in the months ahead, if a solution isn't worked out soon. Such inequities are expected to continue cropping up as long as controls are in force.

The Cincinnati speech of Ben Fairless, U. S. Steel president (THE IRON AGE, Nov. 22, p. 46-A), ought to be "must" reading for steel consumers looking for clues on how much of a price rise might result from steel labor negotiations. To prevent a strike Washington may set the price rise.

'Rithmetic—Mr. Fairless' "simple, unqualified mathematics" of the case is this: For every penny increase in basic wages of employees, \$20 million must be added to the price of U. S. Steel's products—\$10 million for the rise in employment costs, and \$10 million for resultant inflation in the cost of goods and services his company buys.

How much would a 15-cents-an-hr wage boost increase direct and indirect steelmaking costs? One way to figure it is this: In the first 9 months of 1951, U. S. Steel shipped finished products at an annual rate of about 25 million tons. A 15¢ wage boost would increase U. S. Steel's costs by \$300 million. Divide this by 25 million tons and the answer is \$12 per ton. This doesn't take into consideration other cost increases in the past year or more.

Ingot Rate Up—Steelmaking operations this week are scheduled at 104 pct of rated capacity, up half a point from the previous week. Possibility of a strike and the dangerously low level of scrap stocks prevent any smugness over the production outlook.



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Market Briefs

channel contract — After extended negotiations a contract has been concluded between the Venezuelan government and Orinoco Mining Co., a U. S. Steel Corp. subsidiary, for the dredging and maintenance of a ship channel through the Macareo and Orinoco Rivers. This will permit ocean-going ships to load ore at the Orinoco River terminal of the 90-mile railroad from the company's Cerro Bolivar mines. First shipments of iron ore from Cerro Bolivar to the U. S. are scheduled for early 1954.

shipping — Regardless of early winter freezing conditions at Upper Lake ports, iron ore shippers are still looking for a record season for 1951. M. D. Harbaugh, recently elected president of the Lake Superior Iron Ore Assn., indicated to THE IRON AGE that a total shipment of 90 million tons of iron ore from Lake Superior district ranges was hoped for. The port of Ashland, Wis., closed for the winter last week. Ports at Two Harbors and Duluth, Minn., and Superior, Wis., were still loading ore carriers, though necessity for steam thawing was slowing operations.

wages — Hourly wages in the iron and steel industry in September set a new record with an average of \$1.974, according to American Iron & Steel Institute. This was 4¢ higher than the 8-month average, and 1.4¢ higher than the previous record of December, 1950. Payroll of the industry in 9 months was \$2.1 billion, 23 pct above the 9-month figure in 1950. Wage earners worked an average 39.1 hr per week in September, down from 40.4 in August. Employment was estimated at 676,700, off 2400 from August.

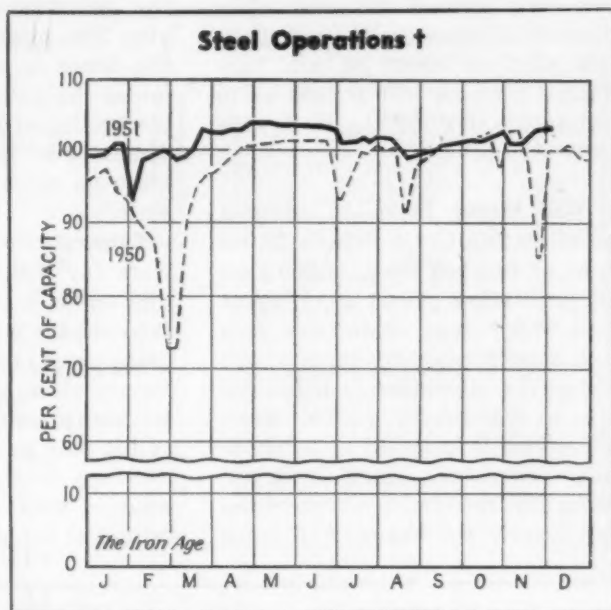
steel ceilings — Fixed markups on steel products at warehouse levels will be established in a new pricing order scheduled for Nov. 30, which Office of Price Stabilization says is intended to keep the flow of steel in normal channels and reduce the number of brokerage operations. Both domestic and imported steel will be affected by the 70-page regulation. Order is viewed as the OPS answer to Congressional charges that slipshod control actions are permitting a gray market in steel.

strike over — All operations of Tennessee, Coal, Iron & Railroad Co. in Birmingham have returned to normal after a strike that closed the plants of the company in Ensley, Fairfield and Bessemer, and its coal and iron ore mines, for 13 days this month. Steel production this week will be 108 pct of rated capacity.

shut down — While a new blooming mill is being installed, Pittsburgh Steel Co. has shut down seven of its 12 openhearth furnaces at Monessen, Pa., effective last Saturday. Production will be curtailed until about Dec. 22, when the bloomer is scheduled to begin operation. Coke plant and blast furnaces will continue normal operations. Company also is enlarging its openhearth furnaces, and expects to have six rebuilt by the end of the year.

Cuban nickel — The United States is making efforts to stimulate production of nickel in Cuba. A Navy airlift is flying in materials from Norfolk, Va., to a U. S.-owned plant at Nicaro, Cuba. A Navy helicopter is being used in suveying mineral deposits around the Nicaro plant. When the reactivated Nicaro plant reaches full production, its annual output is expected to be 16,000 net tons.

drill rod — Ace Drill Corp., Adrian, Mich., is now furnishing steel drill rod in standard 36 in. lengths. Bar stock is heat treated in continuous furnaces. Blanks are available as hardened, tempered and centerless ground from 3/32 to 1 in. or as hardened and tempered in sizes from 0.118 to 0.515 in.



District Operating Rates—Per Cent of Capacity †

Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	West	Buffalo	Cleveland	Detroit	Wheeling	South	Ohio River	St. Louis	East	Aggregate
Nov. 18	104.0*	107.0	104.0	101.5	106.0	104.0	99.5	106.0	103.0*	80.0	98.5	91.5	103.0	103.5
Nov. 25	101.0	106.5	104.0	101.5	104.0	104.0	100.5	106.0	103.0	104.0	98.5	93.5	128.0	104.0

† Beginning Jan. 1, 1951, operations are based on annual capacity of 104,229,650 net tons.

* Revised.

Nonferrous Markets

Arrange English Aluminum Loan

Ton for ton repayment to start 5 months after last shipment of Canadian aluminum . . . Steel "interest" is extra . . . Small zinc consumers to be allocated in 1952—By R. L. Hatschek.

A swap of steel for aluminum has been arranged by Defense Production Administration. Some 11,023 tons of Canadian aluminum will be diverted from England over a 5-month period to bolster currently short supplies in this country. According to DPA chief Manly Fleischmann, this metal has already been figured in first quarter allotments and is needed to allow 20 pct of base period use. He stated further that if it had not been available, these allotments would have had to be cut to 10 pct for non-defense uses.

It should be remembered that imports of Canadian aluminum have dropped some 85 pct from the early part of this year while Canadian shipments to Great Britain shot up about 88 pct. This loaned tonnage will amount to 15 pct rebate, leaving the U. S. with only a 70 pct cut.

Will Repay Loan—In addition to allocating Great Britain 25,000 tons of finished steel, 46,000 tons of conversion priced steel ingots and 28,500 tons of German iron and steel scrap, this country will repay the aluminum loan ton for ton in the fourth quarter when expansion is expected to be virtually completed. Thus, it would seem that the steel is not the swap but merely the bonus. And since

the Canadian shipments will come in for the first 5 months of 1952 and the U. S. will start repaying in October, it is certainly a short term loan for such high "interest."

This deal comes on top of reports that the U. S. is arranging another similar deal with Great Britain—an exchange of steel for Malayan tin (see p. 39). We wonder if as "good" a deal can be made for this commodity, for which the U. S. is the largest market.

Release 30,000 Tons of Lead—

After last week's deadline, President Truman authorized the release of 30,000 tons of lead from the government strategic stockpile. The move, designed to ease the tense supply situation, followed the earlier decision to halt stockpiling of lead during the last 4 months of the year. Repayment must be made "as soon as possible."

Requests for government metal were far higher than the 30,000 tons and it is felt in the trade that this tonnage will be released gradually over an extended period. Nevertheless, the withdrawal will go far in keeping industry busy and it may have the effect of depressing foreign markets somewhat in view of the new import ceiling of 19¢ per lb.

Revise Zinc Order—National Production Authority has realized that 10- to 20-ton shipments of zinc can really add up to a big total. To conserve some of this tonnage, NPA has revised M-9 to put these smaller tonnages on an allocation basis the same as larger orders. The agency expects this closer inspection of orders to save an additional 750 tons of metal a month for consumers. Effective date is set at Jan. 1, 1952.

Another modification is that users must report monthly leftovers to the government. This follows the style of the new Controlled Materials Plan regulation which requires metal users to return leftovers of steel, copper and aluminum to the NPA's industry division.

Copper Output Rises—October figures of the Copper Institute show domestic crude production of 85,754 tons, greatest in 6 months, and refined production of 104,148, the highest in 5 months. Deliveries to fabricators, including stockpile withdrawals, also showed an increase to 125,256 tons and refined stocks rose to 78,192 tons.

Dealers Defended—At a recent meeting of the Empire Metal Merchants Assn., Ben Kaufman of the National Assn. of Waste Material Dealers came to the defense of scrap metals dealers. He stated that dealers are blamed for all faults in trying times like these when the real causes behind dropping shipments of scrap are reduced imports and elimination of government scrap as a source of material.

Scrap Trudging On—Eastern dealers report aluminum scrap continues very light while zinc and lead intake has improved slightly—but not enough to meet demand. Dealer-dealer trading seems to be slowing, possibly because of pending Washington control on these activities.

NONFERROUS METAL PRICES

	Nov. 21	Nov. 22	Nov. 23	Nov. 24	Nov. 26	Nov. 27
Copper, electro, Conn.	24.50	....	24.50	24.50	24.50	24.50
Copper, Lake delivered ...	24.625	....	24.625	24.625	24.625	24.625
Tin, Straits, New York	\$1.03	....	\$1.03	....	\$1.03	\$1.03*
Zinc, East St. Louis	19.50	....	19.50	19.50	19.50	19.50
Lead, St. Louis	18.80	18.80	18.80	18.80	18.80

*Tentative

Note: Quotations are going prices.

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Iron and Steel Scrap Markets

Shortage Slams on Pittsburgh Mill

Scrap stockpile in Pittsburgh area seen dangerous . . . One large mill had 1-day inventory . . . Blast furnace shutdown makes things worse . . . NPA rushes in emergency allocations.

Hovering at the trouble mark for past months the scrap supply in Pittsburgh took a turn for the worse this week. Simultaneously there were danger signals flaring up from some mills in the Chicago area. Other steelmaking centers are more comfortable, for these shortage times, but none are in the safety zone.

A large mill in the Pittsburgh area was watching at the railroad yards for allocated scrap to come in. Last weekend the mill had only a 1-day supply. NPA issued priority allocations to save the day and at press time it was a race between freight cars bearing scrap and shutdown.

An Ohio Valley mill was also reported to be in danger of imminent shutdown. Monongahela Valley operations of U. S. Steel Co. were further endangered by shutdown of a blast furnace for relining. Loss of pig iron meant that 700 extra tons of purchased scrap per day are needed to fill the breach.

Sustained adverse weather this winter could tip already delicately balanced scales and send National Production Authority allocations men into a frenzy trying to balance voracious demand to dwindling supply. Meanwhile, results of the scrap campaign being conducted throughout industry were not as substantial as had been anticipated.

Scrap men were saying grimly that much help had been promised from many quarters but the trade was doing the big job of keeping up steel operating rates almost singlehandedly.

Smaller mills are generally regarded as sitting more securely in the allocations scene. Their smaller requirements are more

easily met. Large mills consume much vaster tonnages and allocating scrap to them is a trickier matter.

Pittsburgh—A leading broker described the scrap picture here this week as the worst he has seen in 36 years. The situation is serious. A large mill last weekend was down to a 1-day supply and hoping NPA could come to the rescue with sufficient allocations. Furnace shutdowns were said to be imminent at an Ohio Valley mill. Shutdown of a blast furnace for relining aggravated the scrap problem at Monongahela Valley operations of U. S. Steel Co. With this furnace out, 700 tons per day of additional purchased scrap are required to make up the hot metal loss.

Chicago—U. S. Steel Co. plants in this district are having extreme difficulty. Company officials reported less than a 10-day supply of scrap for the district late last week. Unofficial sources claimed the company is diverting scrap from Gary to South Works which is said to be worse off. Allocations are reported to have been given them to improve inventories but will take some time before they are shipped. Other mills are in better position with inventory estimates running from 3 weeks to a month.

Philadelphia—The local scrap market is a bit quieter this week—probably as a result of a batch of dealer allocations made recently to practically all mills in the area. One broker guesses that mills here have at least a 2-week supply but complaints are heavy on bundle quality. Not enough good quality material is available to balance poorer grades.

New York—Some super-priority NPA allocations were handed out to the local trade to help bail out desperate Pittsburgh mills. Other allocations stayed in the East. Cold weather is slowing up peddler activity and industrial scrap receipts are said to be slightly down.

Detroit—During the past week NPA has temporarily halted shipments of all grades but blast furnace scrap to a Detroit mill. Length of the ban is not known but the order undoubtedly reflects the easing of the scrap situation in this area. Turnings are reported to be particularly weak.

Cleveland—While weather conditions have seriously affected scrap collections, most mills are still able to hold their own. Openhearth grades getting tighter, blast furnace turnings and borings holding their own and electric grades in fairly good supply. Cast scrap supplies improved with arrival late last week of a boatload of cast iron scrap from Duluth. Elsewhere in the area broken cast is hard to find with unclean motor blocks plentiful.

St. Louis—The scrap iron supply situation continues to grow tighter for steel mills here. Movement to the district has tapered off considerably, and mills have been steadily eating into their inventories. Railroad lists are extremely light, as dismantling programs have been sharply reduced. One road, which ordinarily produces about 3000 tons of scrap monthly, is now producing only about 500 tons.

Birmingham—Heavy melting scrap continues to come into the district, most of it on allocation. Mills are watching specifications and brokers report several rejections in the past few weeks. Results of scrap drives in several Alabama counties have not yet been felt, but reports indicate dealers in these counties soon will be offering goodly amounts. Some mills are wondering what is becoming of rerolling rails.

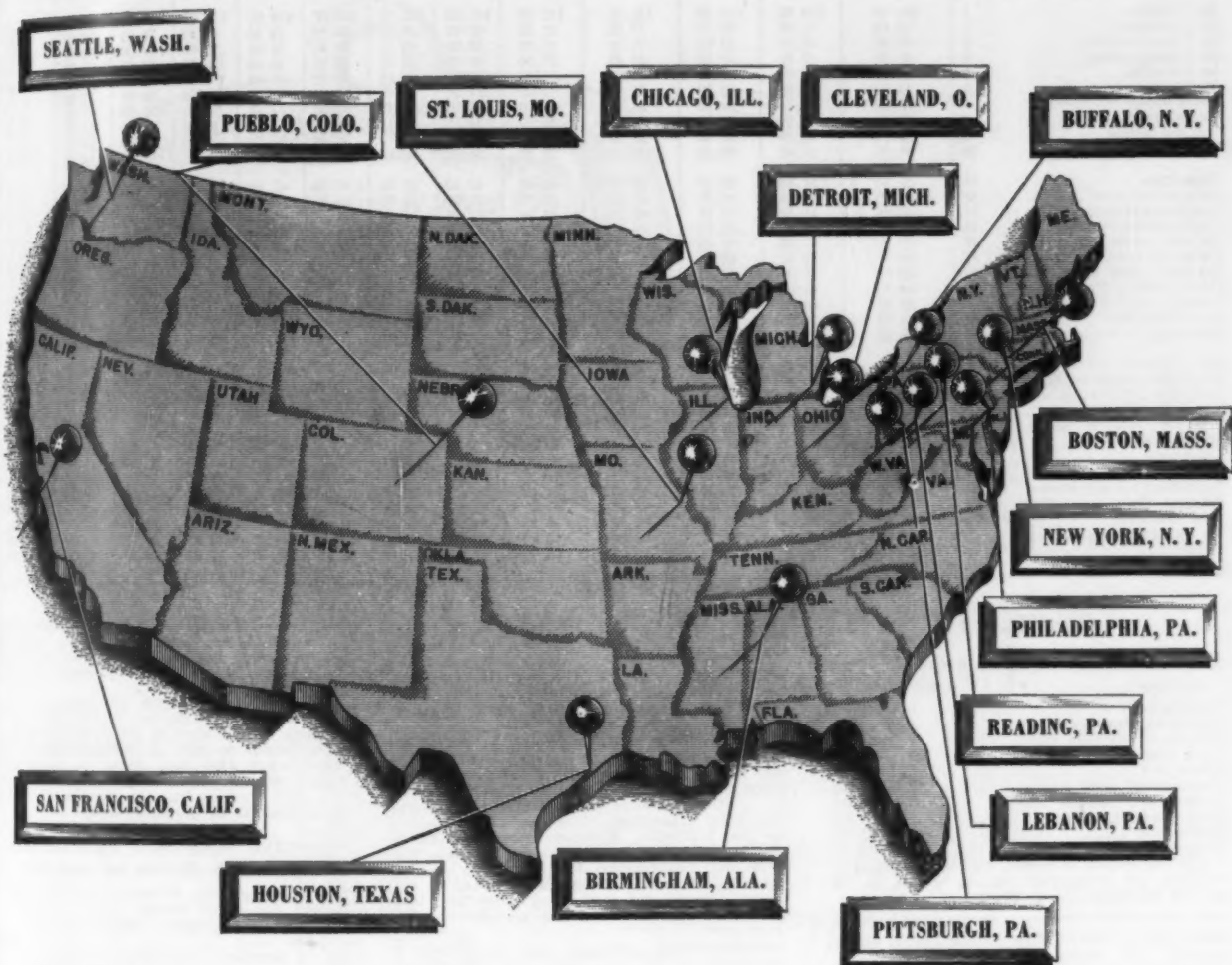
Cincinnati—Strong demand for all grades continues while local generation of scrap is slowing up. Stove plate and cupola cast grades are easy but cast is tight with exception of unclean blocks. Foundries and electric furnace operators are in good condition as are the mills. Position of auto wreckers and dealers is still bad.

Boston—The Thanksgiving day holiday and some rain slowed the market here just a little.

Buffalo—Deep inroads into scrap reserves jeopardize future output. Allocations still leave the district. Demands for hot iron should increase soon. Cast is weak.

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LEADERS IN IRON AND STEEL SCRAP SINCE 1889

November 29, 1951

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Scrap Prices

Iron and Steel

SCRAP PRICES

(Maximum basing point prices, per gross ton, as set by OPS in CPR 5 and amendments. Shipping point and delivered prices calculated as shown below.)

GRADES	OPS No.	Basing Points															
		Pittsburgh	Johnstown	Brackenridge	Butler	Midland	Monessen	Sharon	Youngstown	Canton	Steubenville	Warren	Weirton	Cleveland	Buffalo	Cincinnati	Middletown
No. 1 bundles	1	\$44.00							\$44.00					\$43.00			
No. 1 busheling	2	44.00							44.00					43.00			
No. 1 heavy melting	3	43.00							43.00					42.00			
No. 2 heavy melting	4	43.00							43.00					42.00			
No. 2 bundles	5	43.00							43.00					42.00			
Machine shop turnings	6	34.00							34.00					33.00			
Mixed borings and turnings	7	38.00							38.00					37.00			
Shoveling turnings	8	38.00							38.00					37.00			
Cast iron borings	10	38.00							38.00					37.00			
No. 1 chemical borings	20	41.00							41.00					40.00			
Forge crops	11	51.50							51.50					50.50			
Bar crops and plate	12	49.00							49.00					48.00			
Punchings and plate	14	46.50							46.50					45.50			
Electric furnace bundles	15	46.00							46.00					45.00			
Cut struct., plate, 3 ft and less	16	47.00							47.00					46.00			
Cut struct., plate, 2 ft and less	17	49.00							49.00					48.00			
Cut struct., plate, 1 ft and less	18	50.00							50.00					49.00			
Foundry steel, 2 ft and less	20	44.00							44.00					43.00			
Foundry steel, 1 ft and less	21	46.00							46.00					45.00			
Heavy trimmings	24	43.00							43.00					42.00			
Hard steel, 2 ft and less	30	49.00							49.00					48.00			
No. 1 RR heavy melting	RR 1	46.00							46.00					45.00			
Scrap rails, random lengths	RR 14	48.00							48.00					47.00			
Scrap rails, 3 ft and less	RR 16	51.00							51.00					50.00			
Scrap rails, 2 ft and less	RR 17	52.00							52.00					51.00			
Scrap rails, 18 in. and less	RR 18	54.00							54.00					53.00			
Rolling rails	RR 15	53.00							53.00					52.00			
Uncut tires	RR 20	48.00							48.00					47.00			
Cut tires	RR 21	51.00							51.00					50.00			
Cut holsters and side frames	RR 23	49.00							49.00					48.00			
RR specialties	RR 24, 28, 29	51.00							51.00					50.00			
Solid steel axles	RR 25	58.00							58.00					57.00			
No. 3 steel wheels	RR 27	51.00							51.00					50.00			
Unassorted	RR 35	40.00							40.00					39.00			

Cast Scrap

(F.o.b. all shipping points)

Grades	OPS No.	Price
Cupola cast	1	\$49.00
Charging box cast	2	47.00
Heavy breakable cast	3	45.00
Cast iron brake shoes	5	41.00
Stove plate	6	46.00
Clean auto cast	7	52.00
Unstripped motor blocks	8	43.00
Cast iron car wheels	9	47.00
Malleable	10	55.00
Drop broken mach'y cast	11	52.00

SWITCHING DISTRICTS—These basing points include the indicated switching districts: Pittsburgh: Bessemer, Homestead, Duquesne, Munhall, Cincinnati: Newport, St. Louis: Granite City, East St. Louis, Madison, and Federal, Ill. San Francisco: South San Francisco, Niles, Oakland, Claymont: Chester, Chicago: Gary.

SHIPPING POINT PRICES (Except RR scrap)—for shipping points within basing points, the ceiling shipping point price is the basing point price, less switching charge. The ceiling for shipping points outside basing points is the basing point price yielding the highest shipping point price, less the lowest established freight charge. Dock charge, where applicable, is \$1.25 per gross ton except: Memphis, \$64; Great Lakes ports, \$1.50; and New England ports, \$1.75. Maximum shipping point price on No. 1 bundles (prime grade) in New York City is \$36.99 per gross ton with set differentials for other grades. Hudson and Bergen County, N. J., shipping point prices are computed from Bethlehem basing point. All New Jersey computations use all-rail transport. Cast scrap shipping point prices are given in table.

DELIVERED PRICES (RR scrap)—Ceiling on-line price of a RR operating in a basing point is the top in the highest priced basing point in which the RR operates. For off-line prices, RR's not operating in basing point non-operating RR's, and RR scrap sold by

someone other than a RR see text of order, THE IRON AGE, Feb. 8, 1951, p. 137-C and amend. 4, CPR 5.

DELIVERED PRICES (Except RR scrap)—Ceiling is the shipping point price plus actual freight charge, tax included. Dock charges, where applicable, are as above.

UNPREPARED SCRAP—Under Amend. 5 to CPR 5 ceiling prices are established for certain unprepared grades. Unprepared steel scrap for compression into No. 1 bundles calls for a \$6 differential (or deduction) from the base (No. 1 bundles). Unprepared steel scrap for No. 2 bundles, \$9 from base. Unprepared steel scrap other than material suitable for hydraulic compression, \$8 from base. Sec. 7 (a) (2) (Railroad grades) is amended to include: Unprepared steel scrap other than material suitable for hydraulic compression, \$8 from base.

COMMISSIONS—Brokers are permitted a maximum of \$1 per gross ton commission which must be separate on the bill.

ALLOY PREMIUMS—These alloy extras are permitted: Nickel: \$1.25 may be added to price of No. 1 heavy for each 0.25 pct nickel between 1 and 5.25 pct. Molybdenum: \$2 may be added to price of No. 1 heavy for molybdenum over 0.15 pct, \$3 for content over 0.65 pct. Manganese: \$4 may be added to price of No. 1 heavy or No. 1 RR heavy for content over 10 pct if scrap is in sizes over 8 x 12 x 24 in., \$14 if less than 8 x 12 x 24 in. Manganese premium applicable only if sold for electric furnace use or on NPA allocation. Silicon: electric furnace and foundry grade adjustments are not applicable if silicon content is between 0.5 and 1.75 pct. Chromium: \$1 may be added if scrap conforms to SAE 52100 analysis. Multiple Alloys: if scrap contains two premium alloy elements, total premium may not exceed ceiling premium for any one contained alloy.

RESTRICTIONS ON USE—Ceiling prices on some scrap items may fluctuate with use by consumers. If some scrap is purchased for its established specialized use, the ceiling price set in the order stands. But if some special grades are purchased for other uses, the ceiling price charge shall be the price of the scrap grade being substituted. Restrictions on use are placed on the following grades: Chemical borings, wrought iron and rolling rails, cupola cast, billet, bloom, and forge crops,

No. 1 and 2 chemical borings. Ceiling price on billet, bloom and forge crops, alloy-free turnings, and heavy turnings may be charged only when shipped directly from industrial producer.

See Amend. 5 to CPR for setting of single price on No. 1 Heavy, No. 2, and No. 1 bundles. No. 1 bundles are made prime grade from which to add or subtract differential. Amendment also puts dealer to dealer sales under ceilings, permitting a \$1 resale margin, and trucking charges may be added only on shipments of prepared scrap.

CEILING INTRANSIT PREPARATION CHARGES (Dollars per gross ton)

No. 1 heavy; No. 2 heavy; No. 1 RR heavy; No. 2 RR heavy; No. 1 busheling; No. 2 bundles; electric furnace bundles	\$8.00
No. 1 bundles; briquetted turnings or cast iron borings; No. 1 RR sheet scrap	6.00
Crushing machine shop turnings	3.00
Bar crops and plate, cast steel, punchings and plate, cut structural and plate, 3 ft and under, foundry steel, 2 ft and under, wrought iron	10.00
Structural, plate scrap, 2 ft and less, foundry steel 1 ft and less	11.00
Structural and plate scrap, 1 ft and less	12.00
Rails, 3 ft & less; cut tires; cut holsters & side frames	4.00
Rails, 2 ft & less	5.00
Rails, 18 in. & less	7.00

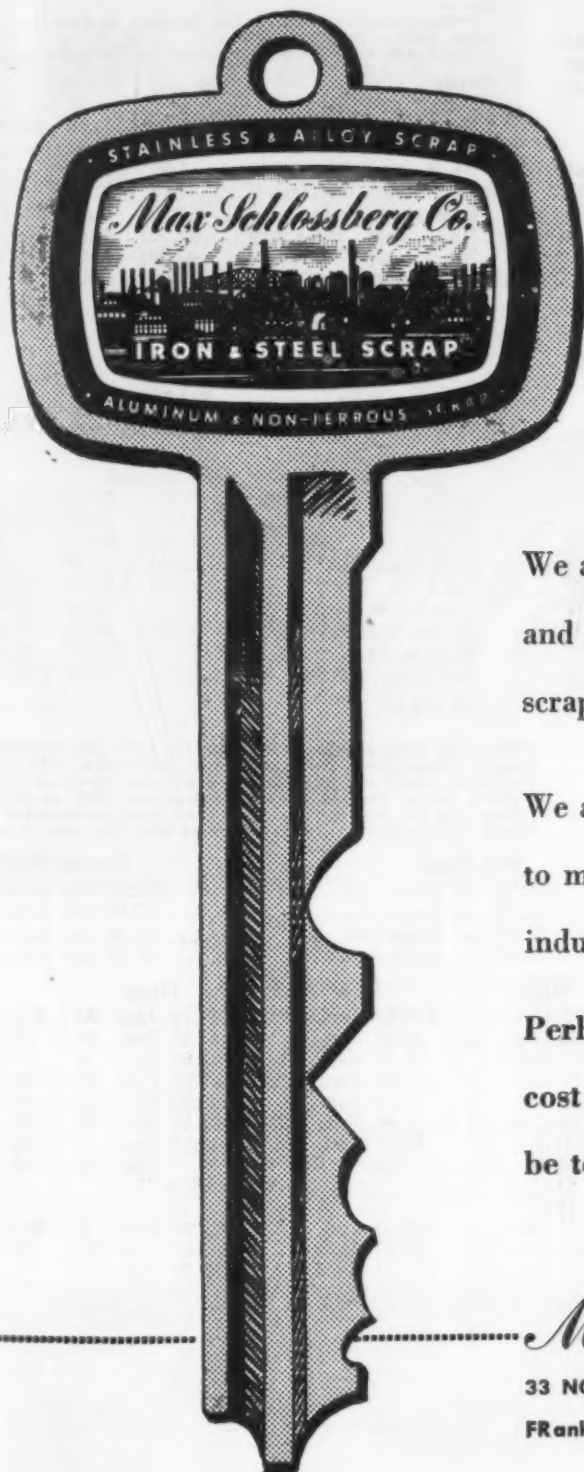
Hamilton, Ontario

(Consumers buying prices, del'd gross ton)

Hvy. melting steel	\$35.00
No. 1 bundles	25.00
No. 2 bundles	34.50
Mechanical bundles	33.00
Mixed, steel scrap	31.00
Rails, remelting	35.00
Rails, rolling	38.00
Bushellings	30.00
Bushellings, prepared new factory	33.00
Bushellings, unprepared new factory	28.00
Short steel turnings	32.00
Mixed borings, turnings	32.00
Cast scrap	65.00

The Key to . . .

Service and Dependability



We are brokers and dealers in ferrous and non-ferrous metals—both in scrap and semi-finished form.

We are today rendering efficient service to many of America's leading industrial scrap sources.

Perhaps we can help you, too. It will cost you nothing to inquire—it may be to your disadvantage—not to!

Max Schlossberg Co.

33 NORTH LASALLE STREET, CHICAGO 2, ILL.

FRANKLIN 2-6380

Comparison of Prices

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Flat-Rolled Steel:	Nov. 27, 1951	Nov. 20, 1951	Oct. 30, 1951	Nov. 28, 1950
(cents per pound)	1951	1951	1951	1950
Hot-rolled sheets	3.60	3.60	3.60	3.35
Cold-rolled sheets	4.35	4.35	4.35	4.10
Galvanized sheets (10 ga)	4.80	4.80	4.80	4.40
Hot-rolled strip	3.50	3.50	3.50	3.25
Cold-rolled strip	4.75	4.75	4.75	4.21
Plate	3.70	3.70	3.70	3.50
Plates wrought iron	7.85	7.85	7.85	7.85
Stains C-R strip (No. 302)	36.75	36.75	36.75	34.50

Tin and Ternplate:

(dollars per base box)				
Tinplate (1.50 lb.) cokes	\$8.70	\$8.70	\$8.70	\$7.50
Tinplate, electro (0.50 lb.)	7.40	7.40	7.40	6.60
Special coated mfg. ternes	7.50	7.50	7.50	6.35

Bars and Shapes:

(cents per pound)				
Merchant bars	3.70	3.70	3.70	3.45
Cold finished bars	4.55	4.55	4.55	4.15
Alloy bars	4.20	4.30	4.30	3.95
Structural shapes	3.65	3.65	3.65	3.40
Stainless bars (No. 302)	31.50	31.50	31.50	30.00
Wrought iron bars	9.50	9.50	9.50	9.50

Wire

(cents per pound)				
Bright wire	4.85	4.85	4.85	4.50

Rails:

(dollars per 100 lb)				
Heavy rails	\$3.60	\$3.60	\$3.60	\$3.40
Light rails	4.00	4.00	4.00	3.75

Semifinished Steel:

(dollars per net ton)				
Rerolling billets	\$56.00	\$56.00	\$56.00	\$54.00
Slabs, rerolling	56.00	56.00	56.00	54.00
Forging billets	66.00	66.00	66.00	63.00
Alloy blooms billets, slabs	70.00	70.00	70.00	66.00

Wire Rod and Skelp:

(cents per pound)				
Wire rods	4.10	4.10	4.10	3.85
Skelp	3.35	3.35	3.35	3.15

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

Pig Iron:	Nov. 27, 1951	Nov. 20, 1951	Oct. 30, 1951	Nov. 28, 1950
(per gross ton)	1951	1951	1951	1950
No. 2 foundry, del'd Phila.	\$57.97	\$57.97	\$57.97	\$54.77
No. 2, Valley furnace	52.50	52.50	52.50	49.50
No. 2, Southern Cin'ti	55.58	55.58	55.58	52.58
No. 2, Birmingham	48.88	48.88	48.88	45.88
No. 2, foundry, Chicago†	52.50	52.50	52.50	49.50
Basic del'd Philadelphia	57.09	57.09	57.09	53.92
Basic, Valley furnace	52.00	52.00	52.00	49.00
Malleable, Chicago†	52.50	52.50	52.50	49.50
Malleable, Valley	52.50	52.50	52.50	49.50
Charcoal, Chicago	70.56	70.56	70.56	70.56
Ferromanganese†	186.25	186.25	186.25	181.20

†The switching charge for delivery to foundries in the Chicago district is \$1 per ton.

‡Average of U. S. prices quoted on Ferroalloy page.

Scrap:

(per gross ton)				
No. 1 steel, Pittsburgh	\$43.00*	\$43.00*	\$43.00*	\$43.75
No. 1 steel, Phila. area	41.50*	41.50*	41.50*	38.75
No. 1 steel, Chicago	41.50*	41.50*	41.50*	39.75
No. 1 bundles, Detroit	41.15*	41.15*	41.15*	41.25
Low phos. Young'n	46.50*	46.50*	46.50*	46.25
No. 1 cast, Pittsburgh	49.00†	49.00†	49.00†	60.75
No. 1 cast, Philadelphia	49.00†	49.00†	49.00†	56.50
No. 1 cast, Chicago	49.00†	49.00†	49.00†	62.00

*Basing Pt. †Shipping Pt.

Not including broker's fee after Feb. 7, 1951.

Coke: Connellsville:

(per net ton at oven)				
Furnace coke, prompt	\$14.75	\$14.75	\$14.75	\$14.25
Foundry coke, prompt	17.75	17.75	17.75	16.75

Nonferrous Metals:

(cents per pound to large buyers)				
Copper, electro, Conn.	24.50	24.50	24.50	24.50
Copper, Lake, Conn.	24.625	24.625	24.625	24.625
Tin, Straits, New York	\$1.03†	\$1.03	\$1.03	\$1.405
Zinc, East St. Louis	19.50	19.50	19.50	17.50
Lead, St. Louis	18.80	18.80	18.80	16.80
Aluminum, virgin	19.00	19.00	19.00	19.00
Nickel, electrolytic	59.58	59.58	59.58	51.22
Magnesium, ingot	24.50	24.50	24.50	24.50
Antimony, Laredo, Tex.	50.00	50.00	42.00	32.00

†Tentative.

Starting with the issue of May 12, 1949, the weighted finished steel composite was revised for the years 1941 to date. The weights used are based on the average product shipments for the 7 years 1937 to 1940 inclusive and 1946 to 1948 inclusive. The use of quarterly figures has been eliminated because it was too sensitive. (See p. 130 of May 12, 1949, issue.)

Composite Prices

Finished Steel Base Price

Nov. 27, 1951	4.131¢ per lb.
One week ago	4.131¢ per lb.
One month ago	4.131¢ per lb.
One year ago	3.837¢ per lb.

	High	Low
1951....	4.131¢ Jan. 2	4.131¢ Jan. 2
1950....	4.131¢ Dec. 1	3.837¢ Jan. 3
1949....	3.837¢ Dec. 27	3.3705¢ May 3
1948....	3.721¢ July 27	3.193¢ Jan. 1
1947....	3.193¢ July 29	2.848¢ Jan. 1
1946....	2.848¢ Dec. 31	2.464¢ Jan. 1
1945....	2.464¢ May 29	2.396¢ Jan. 1
1944....	2.396¢	2.396¢
1943....	2.396¢	2.396¢
1942....	2.396¢	2.396¢
1941....	2.396¢	2.396¢
1940....	2.30467¢ Jan. 2	2.24107¢ Apr. 16
1939....	2.35367¢ Jan. 3	2.26689¢ May 16
1938....	2.58414¢ Jan. 4	2.27207¢ Oct. 18
1937....	2.58414¢ Mar. 9	2.32263¢ Jan. 4
1936....	2.32263¢ Dec. 28	2.05200¢ Mar. 10
1932....	1.89196¢ July 5	1.83910¢ Mar. 1
1929....	2.31773¢ May 28	2.26498¢ Oct. 29

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strips, representing major portion of finished steel shipment. Index recapitulated in Aug. 28, 1941, issue and in May 12, 1949.

Pig Iron

\$52.72 per gross ton
52.72 per gross ton
52.72 per gross ton
49.69 per gross ton

High			Low		
\$52.72	Oct.	9	\$52.69	Jan.	2
52.69	Dec.	12	45.88	Jan.	3
46.87	Jan.	18	45.88	Sept.	6
46.91	Oct.	12	39.58	Jan.	6
37.98	Dec.	30	30.14	Jan.	7
30.14	Dec.	10	25.37	Jan.	1
25.37	Oct.	23	23.61	Jan.	2
\$23.61			\$23.61		
23.61			23.61		
23.61			23.61		
\$23.61	Mar.	20	\$23.45	Jan.	2
23.45	Dec.	23	22.61	Jan.	2
22.61	Sept.	19	20.61	Sept.	12
23.25	June	21	19.61	July	6
32.25	Mar.	9	20.25	Feb.	16
19.74	Nov.	24	18.73	Aug.	11
14.81	Jan.	5	13.56	Dec.	6
18.71	May	14	18.21	Dec.	17

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Scrap Steel

\$42.00 per gross ton
42.00 per gross ton
42.00 per gross ton
40.75 per gross ton

High			Low		
\$47.75	Jan.	30	\$42.00	Oct.	23
45.13	Dec.	19	26.25	Jan.	3
43.00	Jan.	4	19.33	June	28
43.16	July	27	39.75	Mar.	9
42.58	Oct.	28	29.50	May	20
31.17	Dec.	24	19.17	Jan.	1
19.17	Jan.	2	18.92	May	22
19.17	Jan.	11	15.76	Oct.	24
\$19.17			\$19.17		
19.17			19.17		
\$22.00	Jan.	7	\$19.17	Apr.	10
21.83	Dec.	30	16.04	Apr.	9
22.50	Oct.	3	14.08	May	16
15.00	Nov.	22	11.00	June	7
21.92	Mar.	30	12.87	June	9
17.75	Dec.	21	12.87	June	8
8.50	Jan.	12	6.43	July	5
17.58	Jan.	29	14.08	Dec.	8
Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chi- cago.					

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Heavy
Nov. 28,
1950
\$54.77
49.50
52.58
45.88
49.50
53.92
49.00
49.50
49.50
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81.20
e Chi-
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19.75
11.25
6.25
0.75
6.50
2.00
4.25
0.75
1.50
1.625
1.405
1.50
1.80
1.00
1.22
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1.00
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November 29, 1951

for
BORON STEELS
*plus values
are secured*

by Grainal Alloys

Plus values in effectiveness and in uniformity of results are obtained by the production of boron steels with Grainal alloys, for these alloys are composed of boron *plus* other carefully selected elements.

These additional elements . . . by combining with excess nitrogen and oxygen . . . enable the boron to function most effectively and thus consistently secure maximum benefits.

VANADIUM CORPORATION OF AMERICA

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MAKERS OF ALLOYS



CHEMICALS AND METALS

IRON AGE STEEL PRICES	Smaller numbers in price boxes indicate producing companies. For main office locations, see key on facing page. Base prices at producing points apply only to sizes and grades produced in these areas. Prices are in cents per lb unless otherwise noted. Extras apply.													
	Pittsburgh	Chicago	Gary	Cleveland	Canton Massillon	Middle- town	Youngs- town	Bethle- hem	Buffalo	Consho- hocken	Johns- town	Spar- rows Point	Granite City	Detroit
INGOTS Carbon forging, net ton	\$52.00 ¹													
Alloy, net ton	\$54.00 ¹⁻¹⁷													\$54.00 ¹
BILLETS, BLOOMS, SLABS Carbon, reeling, net ton	\$56.00 ¹⁻⁵	\$56.00 ¹	\$56.00 ¹						\$56.00 ³		\$56.00 ³			
Carbon forging billets, net ton	\$66.00 ¹⁻⁵	\$66.00 ¹⁻⁴	\$66.00 ¹	\$66.00 ⁴	\$66.00 ⁴				\$66.00 ³⁻⁴	\$73.00 ²⁻³	\$66.00 ³			\$66.00 ¹
Alloy, net ton	\$70.00 ¹⁻¹⁷⁻⁵	\$70.00 ¹⁻⁴	\$70.00 ¹⁻⁵		\$70.00 ⁴			\$70.00 ³	\$70.00 ³⁻⁴	\$77.00 ³⁻⁵	\$70.00 ³			\$73.00 ¹
PIPE SKELP	3.35 ¹ 3.45 ²						3.35 ¹⁻⁴							
WIRE RODS	4.10 ³ 4.30 ¹⁻⁵	4.10 ²⁻⁴⁻⁵⁻⁵	4.10 ⁶	4.10 ²			4.10 ⁴		4.10 ³⁻⁵		4.10 ³	4.20 ³		
SHEETS Hot-rolled (18 ga. & hvr.)	3.60 ¹⁻⁵⁻⁹⁻¹⁵ 3.75 ²⁻⁸	3.60 ⁵⁻²³	3.60 ¹⁻⁶⁻⁹	3.60 ⁴⁻⁵		3.60 ⁷	3.60 ¹⁻⁴⁻⁸ 4.00 ¹⁻³		3.60 ⁵	4.00 ³⁻⁶		3.60 ³	4.30 ²⁻³	3.60 ¹⁻³ 4.40 ¹⁻⁷
Cold-rolled	4.35 ¹⁻⁵⁻⁹⁻¹⁵⁻⁷		4.35 ¹⁻⁶⁻⁸	4.35 ⁴⁻⁵		4.35 ⁷	4.35 ⁴⁻⁶		4.35 ³			4.35 ³	5.00 ²⁻³	4.35 ¹⁻³
Galvanized (10 gage)	4.80 ¹⁻⁹⁻¹⁵		4.80 ¹⁻⁸		4.80 ⁴	4.80 ⁷	5.50 ⁴⁻⁴ 6.00 ⁴⁻⁴					4.80 ³	5.50 ²⁻³	
Enameling (12 gage)	4.65 ¹		4.65 ¹⁻⁸	4.65 ⁴		4.65 ⁷	4.65 ⁴						5.35 ²⁻³	
Long terne (10 gage)	5.20 ⁹⁻¹⁵		5.20 ¹			5.20 ⁷	6.00 ⁴⁻⁴							
Hi str. low alloy, h.r.	5.40 ¹⁻⁵ 5.75 ²	5.40 ¹	5.40 ¹⁻⁸ 5.90 ⁶	5.40 ⁴⁻⁵			5.40 ¹⁻⁴⁻¹³ 5.90 ⁴		5.40 ³	5.65 ³⁻⁶		5.40 ³		5.95 ¹⁻³
Hi str. low alloy, c.r.	6.55 ¹⁻⁵ 6.90 ⁶		6.55 ¹⁻⁸ 7.05 ⁶	6.55 ⁴⁻⁵			6.55 ⁴ 7.05 ⁴		6.55 ³			6.55 ³		7.10 ¹⁻³
Hi str. low alloy, galv.	7.20 ¹											6.75 ³		
STRIP Hot-rolled	3.60 ⁹⁻⁴⁻⁰⁰⁻¹¹⁻¹⁵⁻¹⁷⁻²⁸ 3.50 ⁵⁻⁷	3.50 ⁶⁻⁶	3.50 ¹⁻⁶⁻⁸			3.50 ⁷	3.50 ¹⁻⁴⁻⁶ 4.00 ¹⁻³		3.50 ³⁻⁴	3.90 ³⁻⁶	3.50 ³	3.50 ³		4.40 ¹⁻⁷ 3.80 ¹⁻³
Cold-rolled	4.65 ⁵⁻⁷⁻⁹ 5.00 ²⁻⁸ 5.35 ⁴⁻⁹⁻¹⁵	4.90 ²⁻⁶⁻⁸	4.90 ³	4.65 ²⁻⁵		4.65 ⁷	4.65 ⁴⁻⁶ 5.25 ⁴⁻⁸⁻¹⁰ 5.35 ¹⁻³⁻⁴⁻⁹		4.65 ³			4.65 ³		4.85 ¹⁻³ 5.45 ⁴⁻⁷ 6.00 ⁴⁻¹¹
Hi str. low alloy, h.r.	5.75 ³		5.50 ¹ 5.30 ⁵⁻⁸⁻⁸⁰	6.55 ² 6.70 ⁵			4.95 ⁴⁻⁵ 5.40 ¹⁻³⁻⁵⁻⁸⁰ 6.20 ⁴ 6.55 ¹⁻³ 7.05 ⁶		4.95 ³	5.55 ³⁻⁶		4.95 ³		5.95 ¹⁻³
Hi str. low alloy, c.r.	7.20 ³								6.40 ³			6.40 ³		
TINPLATE† Cokes, 1.25-lb base box (1.50 lb, add 25¢)	\$8.45 ¹⁻⁵⁻⁹⁻¹⁵		\$8.45 ¹⁻⁶⁻⁸				\$8.45 ⁴					\$8.55 ³		
Electrolytic 0.25, 0.50, 0.75 lb box	0.25 lb base box, \$7.15 ¹⁻⁴⁻⁵⁻⁸⁻⁹ ; \$7.25 ³⁻¹¹ ; \$7.35 ²⁻³ 0.50 lb, add 25¢; 0.75 lb, add 65¢													
BLACKPLATE, 29 gage Hollowware enameling	5.85 ¹ 6.15 ¹⁻⁵		5.85 ¹				5.30 ⁴							
BARs Carbon steel	3.70 ¹⁻⁵ 3.65 ²	3.70 ¹⁻⁴⁻²³	3.70 ¹⁻⁴⁻⁶⁻⁸	3.70 ⁴	3.70 ⁴		3.70 ¹⁻⁴⁻⁶		3.70 ³⁻⁴		3.70 ³			3.85 ¹ 4.90 ¹⁻¹⁴
Reinforcing	3.70 ¹⁻⁵	3.70 ⁴	3.70 ¹⁻⁶⁻⁸	3.70 ⁴			3.70 ¹⁻⁴⁻⁶		3.70 ³⁻⁶		3.70 ³	3.70 ³		
Cold-finished	4.55 ²⁻⁴⁻⁵⁻¹²⁻¹⁹⁻⁷¹	4.55 ²⁻²³⁻⁷⁰	4.55 ⁴⁻⁷⁴ 73	4.55 ²	4.55 ⁴⁻⁸⁻²		4.55 ⁶⁻⁵⁷		4.60 ⁷⁻⁰					4.70 ⁴
Alloy, hot-rolled	4.30 ¹⁻¹⁷	4.30 ¹⁻⁴⁻²³	4.30 ¹⁻⁶⁻⁸		4.30 ⁴		4.30 ¹⁻⁶	4.30 ⁶	4.30 ⁶⁻⁴		4.30 ³			4.45 ¹ 4.85 ¹⁻³
Alloy, cold-drawn	5.40 ¹⁻⁷⁻²²⁻²⁹⁻⁷¹⁻²	5.40 ⁴⁻²³⁻⁶⁹⁻⁷⁹⁻⁷³ 5.45 ²	5.40 ⁴⁻⁷³ 74		5.40 ⁴⁻²²		5.40 ⁶⁻²⁰⁻⁵⁷	5.40 ³	5.40 ³					5.35 ²⁻⁴ 6.80 ¹⁻¹⁴
Hi str. low alloy, h.r.	5.55 ¹⁻⁵		5.55 ¹⁻⁸ 6.05 ⁶	5.55 ⁴⁻⁵			5.55 ¹ 6.05 ⁶	5.55 ³	5.55 ³		5.55 ³			
PLATE Carbon steel	3.70 ¹⁻⁵⁻¹⁵ 4.00 ⁹	3.70 ¹⁻²³	3.70 ¹⁻⁶⁻⁸	3.70 ⁴⁻⁵			3.70 ¹⁻⁴⁻⁶ 3.95 ¹⁻²		3.70 ³	4.15 ³⁻⁶	3.70 ³	3.70 ³	4.40 ²⁻³	
Floor plates	4.75 ¹	4.75 ¹	4.75 ⁶	4.75 ⁵						4.75 ²⁻⁶				
Alloy	4.75 ¹	4.75 ¹	4.75 ¹				5.20 ¹⁻³			5.05 ²⁻⁶	4.75 ³	4.75 ³		
Hi str. low alloy	5.85 ¹⁻⁵	5.85 ¹	5.85 ¹⁻⁸ 6.15 ⁵	5.85 ⁴⁻⁵			5.85 ¹ 6.15 ⁵			5.90 ²⁻⁶	5.85 ³	5.85 ³		
SHAPES, Structural														
Hi str. low alloy	5.50 ¹⁻⁵	5.50 ¹	5.50 ¹⁻⁸ 6.00 ⁶				6.00 ⁶	5.50 ³	5.50 ³		5.50 ³			
MANUFACTURERS' WIRE Bright	4.85 ²⁻⁵ 5.10 ¹⁻³	4.85 ² 4.23-34		4.85 ²			4.85 ²	Kokomo = 4.95 ²⁻⁶ 4.85 ²⁻⁴			4.85 ³	4.95 ³	Duluth = 4.85 ²	
PILING, Steel Sheet	4.45 ¹	4.45 ¹	4.45 ³						4.45 ³					

Smaller numbers indicate producing companies. See key at right.
Prices are in cents per lb unless otherwise noted. Extras apply.

IRON AGE

STEEL PRICES

Key to Steel Producers

- 1 U. S. Steel Co., Pittsburgh
- 2 American Steel & Wire Co., Cleveland
- 3 Bethlehem Steel Co., Bethlehem
- 4 Republic Steel Corp., Cleveland
- 5 Jones & Laughlin Steel Corp., Pittsburgh
- 6 Youngstown Sheet & Tube Co., Youngstown
- 7 Armco Steel Corp., Middletown, Ohio
- 8 Inland Steel Co., Chicago
- 9 Weirton Steel Co., Weirton, W. Va.
- 10 National Tube Co., Pittsburgh
- 11 Tennessee Coal, Iron & R. R. Co., Birmingham
- 12 Great Lakes Steel Corp., Detroit
- 13 Sharon Steel Corp., Sharon, Pa.
- 14 Colorado Fuel & Iron Corp., Denver
- 15 Wheeling Steel Corp., Wheeling, W. Va.
- 16 Geneva Steel Co., Salt Lake City
- 17 Crucible Steel Co. of America, New York
- 18 Pittsburgh Steel Co., Pittsburgh
- 19 Kaiser Steel Corp., Oakland, Calif.
- 20 Portsmouth Div., Detroit Steel Corp., Detroit
- 21 Lukens Steel Co., Coatesville, Pa.
- 22 Granite City Steel Co., Granite City, Ill.
- 23 Wisconsin Steel Co., South Chicago, Ill.
- 24 Columbia Steel Co., San Francisco
- 25 Copperweld Steel Co., Glassport, Pa.
- 26 Alan Wood Steel Co., Conshohocken, Pa.
- 27 Calstrip Steel Corp., Los Angeles
- 28 Allegheny Ludlum Steel Corp., Pittsburgh
- 29 Claymont Steel Corp., Claymont, Del.
- 30 Continental Steel Corp., Kokomo, Ind.
- 31 Rotary Electric Steel Co., Detroit
- 32 Laclede Steel Co., Alton, Ill.
- 33 Northwestern Steel & Wire Co., Sterling, Ill.
- 34 Keystone Steel & Wire Co., Peoria, Ill.
- 35 Central Iron & Steel Co., Harrisburg, Pa.
- 36 Carpenter Steel Co., Reading, Pa.
- 37 Eastern Stainless Steel Corp., Baltimore
- 38 Washington Steel Corp., Washington, Pa.
- 39 Jessop Steel Co., Washington, Pa.
- 40 Blair Strip Steel Co., New Castle, Pa.
- 41 Superior Steel Corp., Carnegie, Pa.
- 42 Timken Steel & Tube Div., Canton, Ohio
- 43 Babcock & Wilcox Tube Co., Beaver Falls, Pa.
- 44 Reeves Steel & Mfg. Co., Dover, Ohio
- 45 John A. Roebling's Sons Co., Trenton, N. J.
- 46 Simonds Saw & Steel Co., Fitchburg, Mass.
- 47 McLouth Steel Corp., Detroit
- 48 Cold Metal Products Co., Youngstown
- 49 Thomas Steel Co., Warren, Ohio
- 50 Wilson Steel & Wire Co., Chicago
- 51 Sweet's Steel Co., Williamsport, Pa.
- 52 Superior Drawn Steel Co., Monaca, Pa.
- 53 Tremont Nail Co., Wareham, Mass.
- 54 Firth Sterling St. & Carbide, McKeesport
- 55 Ingersoll Steel Div., Chicago
- 56 Phoenix Iron & Steel Co., Phoenixville, Pa.
- 57 Fitzsimons Steel Co., Youngstown
- 58 Stanley Works, New Britain, Conn.
- 59 Universal-Cyclops Steel Corp., Bridgeville, Pa.
- 60 American Cladmetals Co., Carnegie, Pa.
- 61 Cuyahoga Steel & Wire Co., Cleveland
- 62 Bethlehem Pacific Coast Steel, San Fran.
- 63 Follansbee Steel Corp., Pittsburgh
- 64 Niles Rolling Mill Co., Niles, Ohio
- 65 Atlantic Steel Co., Atlanta
- 66 Acme Steel Co., Chicago
- 67 Joslyn Mfg. & Supply Co., Chicago
- 68 Detroit Steel Corp., Detroit
- 69 Wycoff Steel Co., Pittsburgh
- 70 Bliss & Laughlin, Inc., Harvey, Ill.
- 71 Columbia Steel & Shafing Co., Pittsburgh
- 72 Cumberland Steel Co., Cumberland, Md.
- 73 La Salle Steel Co., Chicago
- 74 Monarch Steel Co., Inc., Hammond, Ind.
- 75 Empire Steel Co., Mansfield, Ohio
- 76 Mahoning Valley Steel Co., Niles, Ohio
- 77 Oliver Iron & Steel Co., Pittsburgh
- 78 Pittsburgh Screw & Bolt Co., Pittsburgh
- 79 Standard Forging Corp., Chicago
- 80 Driver Harris Co., Harrison, N. J.
- 81 Detroit Tube & Steel Div., Detroit
- 82 Reliance Div., Eaton Mfg. Co., Massillon, Ohio
- 83 Sheffield Steel Corp., Kansas City
- 84 Plymouth Steel Co., Detroit
- 85 Wickwire Spencer Steel, Buffalo
- 86 Angell Nail and Chaplet, Cleveland
- 87 Mid-States Steel & Wire, Crawfordsville, Ind.
- 88 National Supply, Pittsburgh, Pa.
- 89 Wheatland Tube Co., Wheatland, Pa.
- 90 Mercer Tube & Mfg. Co., Sharon, Pa.
- 91 Woodward Iron Co., Woodward, Ala.
- 92 Sloss-Sheffield Steel & Iron Co., Birmingham
- 93 Hanna Furnace Corp., Detroit
- 94 Interlake Iron Corp., Cleveland
- 95 Lone Star Steel Co., Dallas
- 96 Mystic Iron Works, Everett, Mass.
- 97 Jackson Iron & Steel Co., Jackson, O.
- 98 Globe Iron Co., Jackson, O.
- 99 Pittsburgh Coke & Chemical Co., Pittsburgh
- 100 Shenango Furnace Co., Pittsburgh
- 101 Tennessee Products & Chem. Corp., Nashville
- 102 Koppers Co., Inc., Granite City, Ill.
- 103 Page Steel & Wire Div., American Chain & Cable, Monessen, Pa.
- 104 Wallingford Steel Co., Wallingford, Conn.
- 105 Tonawanda Iron Div., N. Tonawanda, N. Y.
- 106 Pilgrim Drawn Steel Div., Automotive Materials Corp., Plymouth, Mich.

Kansas City	Houston	Birmingham	WEST COAST Seattle, San Francisco, Los Angeles, Fontana		
			F=\$79.00 ¹⁹		INGOTS Carbon forging, net ton
	\$52.00 ²²		F=\$80.00 ¹⁹		Alloy, net ton
		\$56.00 ¹¹	F=\$75.00 ¹⁹		BILLETS, BLOOMS, SLABS Carbon, rerolling, net ton
	\$74.00 ²³	\$66.00 ¹¹	F=\$85.00 ¹⁹ SF, LS, S=\$85.00 ²³	Geneva=\$66.00 ¹⁶	Carbon forging billets, net ton
	\$70.00 ²³		F=\$89.00 ¹⁹ LA=\$90.00 ²³		Alloy net ton
				Alton=4.40 ²² Worcester=4.40 ²² Minnequa=4.35 ¹⁴ Portsmouth=4.30 ²⁰	PIPE SKELP
	4.90 ²³	4.10 ¹¹	SF=4.90 ²² , F=4.90 ¹⁹ LA=4.90 ²⁴ , S=4.90 ²³	Niles=5.29 ¹⁴ , Geneva=3.70 ¹⁶ Ashland=3.60 ⁷	WIRE RODS
		3.60 ¹¹	SF, LA=4.30 ²⁴ F=4.55 ¹⁹		SHEETS Hot-rolled (18 ga. & hr.)
		4.35 ¹¹	SF=5.30 ²⁴ F=5.30 ¹⁹		Cold-rolled
		4.80 ¹¹	SF, LA=5.55 ²⁴	Ashland=4.80 ⁷ Kokomo=5.20 ²⁰	Galvanized (10 gage)
				Ashland=4.65 ⁷	Enameling (12 gage)
		5.40 ¹¹	F=6.35 ¹⁹		Long ternes (10 gage)
			F=7.50 ¹⁹		Hi str. low alloy, h.r.
					Hi str. low alloy, c.r.
				Alton=3.95 ²² Atlanta=4.08 ²² Minnequa=4.55 ¹⁴ Ashland=3.50 ⁷	Hi str. low alloy, galv.
4.10 ²³	4.90 ²³	3.90 ¹¹	SF, LA=4.25 ²⁴ , S=4.50 ²³ F=4.75 ¹⁹ , S=4.50 ²³	New Haven=5.15 ²² , S=5.85 ²³ Trenton=8.00 ¹⁵	STRIP Hot-rolled
			F=6.30 ¹⁹ LA=6.40 ²⁷		Cold-rolled
		5.30 ¹¹	F=6.20 ¹⁹ SF, LA=6.05 ²³ S=6.30 ²²		Hi str. low alloy, h.r.
			F=6.95 ¹⁹		Hi str. low alloy, c.r.
		\$8.55 ¹¹	SF=9.20 ²⁴		TINPLATE Cakes, 1.25-lb base box (1.50 lb, add 25¢)
					Electrolytic 0.25, 0.50, 0.75 lb box
					BLACKPLATE, 29 gage Hollowware enameling
4.30 ²³	4.10 ²³	3.70 ¹¹	SF, LA=4.40 ²⁴	Alton=4.15 ²² Atlanta=4.25 ²² Minnequa=4.15 ¹⁴	BARS Carbon steel
4.30 ²³	4.10 ²³	3.70 ¹¹	SF, S=4.45 ²² F=4.40 ¹⁹ , LA=4.40 ²³	Atlanta=4.25 ²² Minnequa=4.50 ¹⁴	Reinforcing
			LA=600 ⁴	Newark=5.00 ²⁰ Putnam=5.10 ²⁰ Hartford=5.10 ⁴	Cold-finished
4.90 ²³	4.70 ²³		LA=5.35 ²³ F=5.35 ¹⁹		Alloy, hot-rolled
				Newark=5.75 ²⁰ Worcester=5.75 ²² Hartford=5.85 ⁴	Alloy, cold-drawn
		5.55 ¹¹	F=6.60 ¹⁹ , SF, S=6.30 ²³ LA=6.25 ²²	Claymont=4.15 ²⁰ Coatesville=4.15 ²² Harrisburg=6.75 ²³ Minnequa=4.50 ¹⁴ Geneva=3.70 ¹⁶	Hi str. low alloy, h.r.
	4.10 ²³	3.70 ¹¹	F=4.30 ¹⁹ S=4.60 ²²	Harrisburg=6.75 ²³	PLATE Carbon steel
				Coatesville=5.25 ²¹ Claymont=4.85 ²⁰	Floor plates
		5.65 ¹¹	F=6.25 ¹⁹ S=5.65 ²²	Geneva=5.65 ¹⁶	Alloy
4.25 ²³	4.05 ²³	3.60 ⁴ 3.65 ¹¹	SF=4.20 ²² , F=4.25 ¹⁹ LA=4.25 ²⁴ , S=4.30 ²³	Geneva 3.65 ¹⁶ Minnequa 4.10 ¹⁴ Phoenixville=6.25 ²⁰	Hi str. low alloy
		5.50 ¹¹	S=6.10 ²² , F=6.10 ¹⁹ SF=6.00 ²² , LA=6.05 ²³	Geneva=5.50 ¹⁶ Alton=5.05 ²² Atlanta=5.10 ²² , Worcester=5.15 ²² Minnequa=5.10 ¹⁴ , Portsmouth=5.25 ²⁰	SHAPES, Structural
4.45 ²³	4.25 ²³	4.85 ¹¹	SF, LA=5.80 ²⁴		Hi str. low alloy
					MANUFACTURERS' WIRE Bright

* Special contract mfg terms deduct 95¢ from 1.25-lb coke base box price. Can-making quality blackplate 55 to 128-lb, deduct \$2.20 from 1.25-lb coke base box.

Steel Prices

STAINLESS STEELS

Base price, cents per lb, f.o.b. mill

Product	301	302	303	304	316	321	347	410	416	430
Ingot rolling.....	14.25	15.25	16.75	16.25	21.75	20.00	21.75	12.75	14.75	13.00
Slabs billets re-rolling.....	18.50	20.00	22.00	21.00	32.25	26.25	26.50	16.50	20.00	16.75
Forg. discs die blocks rings.....	34.00	34.25	36.75	35.75	53.00	40.25	44.75	28.00	28.50	26.50
Billets forging.....	26.25	26.50	28.50	27.75	41.50	31.25	35.00	21.50	22.00	22.00
Bars wires structurals.....	31.25	31.50	34.00	33.00	48.25	37.00	41.80	25.75	26.25	26.25
Plates.....	33.00	33.25	35.25	35.25	52.00	40.75	45.25	27.00	27.50	27.50
Sheets.....	41.00	41.25	43.25	43.25	57.00	49.25	53.75	36.50	37.00	39.00
Strip hot-rolled.....	26.50	26.25	32.50	30.25	48.75	37.00	41.25	23.50	30.25	24.00
Strip cold-rolled.....	34.00	36.75	40.25	38.75	59.00	48.25	52.25	30.50	37.00	31.00

STAINLESS STEEL PRODUCING POINTS—*Sheets*: Midland, Pa., 17; Brackenridge, Pa., 28; Butler, Pa., 7; McKeesport, Pa., 1; Washington, Pa., 38 (type 316 add 4.5¢), 39; Baltimore, 37; Middletown, Ohio, 7; Massillon, Ohio, 4; Gary, 1; Bridgeville, Pa., 59; New Castle, Ind., 55; Ft. Wayne, Ind., 67; Lockport, N. Y., 45.
Strip: Midland, Pa., 17; Cleveland, 2; Carnegie, Pa., 41; McKeesport, Pa., 54; Reading, Pa., 36; Washington, Pa., 38 (type 316 add 4.5¢); W. Leechburg, Pa., 28; Bridgeville, Pa., 59; Detroit, 47; Massillon, Canton, Ohio, 4; Middletown, Ohio, 7; Harrison, N. J., 80; Youngstown, 48; Lockport, N. Y., 46; New Britain, Conn., 58; Sharon, Pa., 13 (type 301 add ¼¢); Butler, Pa., 7; Wallingford, Conn., 104.
Bars: Baltimore, 7; Duquesne, Pa., 1; Munhall, Pa., 1; Reading, Pa., 36; Titusville, Pa., 59; Washington, Pa., 39; McKeesport, Pa., 1, 54; Bridgeville, Pa., 59; Dunkirk, N. Y., 28; Massillon, Ohio, 4; Chicago, 1; Syracuse, N. Y., 17; Watervliet, N. Y., 28; Waukegan, Ill., 2; Lockport, N. Y., 46; Canton, Ohio, 42; Ft. Wayne, Ind., 67.
Wire: Waukegan, Ill., 2; Massillon, Ohio, 4; McKeesport, Pa., 54; Bridgeport, Conn., 44; Ft. Wayne, Ind., 67; Trenton, N. J., 45; Harrison, N. J., 80; Baltimore, 7; Dunkirk, 28; Monessen, 103; Syracuse, N. Y., 17; Bridgeville, Pa., 59.
Structurals: Baltimore, 7; Massillon, Ohio, 4; Chicago, 1, 67; Watervliet, N. Y., 28; Bridgeport, Conn., 44; Syracuse, N. Y., 17.
Plates: Brackenridge, Pa., 28 (type 416 add ¼¢); Butler, Pa., 7; Chicago, 1; Munhall, Pa., 1; Midland, Pa., 17; New Castle, Ind., 55; Lockport, N. Y., 46; Middletown, 7; Washington, Pa., 39; Cleveland, Massillon, 4.
Forged discs, die blocks, rings: Pittsburgh, 17; Syracuse, 17; Ferndale, Mich., 28; Washington, Pa., 39.
Forging billets: Midland, Pa., 17; Baltimore, 7; Washington, Pa., 39; McKeesport, 54; Massillon, Canton, Ohio, 4; Watervliet, 28; Pittsburgh, Chicago, 1; Syracuse, N. Y., 17.

***ALLEGHENY LUDLUM**—Slightly higher on Type 301; slightly lower on others in 300 Series.
WASHINGTON STEEL—Slightly lower on 300 Series except where noted.

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard & Coated Nails	Woven Wire Fence 9-15½ ga.	Fence Posts	Single Loop Bale Ties	Twisted Barbed Wire	Gal. Barbed Wire	Merch. Wire Ann'd	Merch. Wire Gal., (1)
Alabama City-4	118	126		123		136	5.70	6.95
Alliquippa, Pa.-5	118	132			136	140	5.70	6.15
Atlanta-65	121	133		126	126	143	5.95	6.40
Bartonsville-34	118	130		123	143	143	5.70	6.15
Buffalo-85							4.85	
Cleveland-86	125							
Cleveland-2							5.70	6.15
Crawfordsville-87		132					145	5.95
Denora, Pa.-2	118	130		123	140	140	5.70	6.15
Duluth-2	118	130		123	140	140	5.70	6.15
Fairfield, Ala.-11	118	130		123	140	140	5.70	6.15
Houston-83	126	138					148	6.10
Johannesburg, Pa.-3	118	130			140		5.70	6.15
Joliet, Ill.-2	118	130		123			140	6.70
Kokomo, Ind.-30	120	132		126	138	142	5.80	6.05
Los Angeles-82							6.65	
Kansas City-83	130			135			152	6.30
Minneapolis-14	123	138	130	128	146	146	5.95	6.45
Monessen-18	124	135					145	5.95
Moline, Ill.-4			136					
Pittsburg, Cal.-24	137			147	156	160	6.65	6.80
Portsmouth-20	124	137			147	147	6.10	6.60
Rankin, Pa.-2	118	130			140	140	5.70	6.15
So. Chicago, Ill.-4	118	126	140	123			136	5.70
S. San Fran.-14				147			160	6.65
Sparrows, Pt.-3	120			125	142	142	5.80	6.25
Sterling, Ill.-32	118	130		123	140	140	5.70	6.15
Struthers, Ohio-6							6.70	6.15
Torrance, Cal.-24	139						6.65	
Worcester-2	124						6.00	6.45
Williamsport, Pa.-51			150					

Cut Nails, carloads, base, \$7.35 per 100 lb (less 20¢ to jobbers), at Conshohocken, Pa., (26), Wheeling, W. Va., (15), \$7.15.

(1) Alabama City and So. Chicago do not include zinc extra.

CAST IRON WATER PIPE

Per Net Ton
 6 to 24-in., del'd Chicago \$105.30 to \$108.80
 6 to 24-in., del'd N.Y.... 108.50 to 109.50
 6 to 24-in., Birmingham 91.50 to 96.00
 6-in. and larger, f.o.b. cars, San Francisco, Los Angeles, for all rail shipment; rail and water shipment less \$123.00 to \$130.00
 Class "A" and gas pipe, \$5 extra; 4-in. pipe is \$5 a ton above 6-in.

PIPE AND TUBING

Base discounts, f.o.b. mills. Base price about \$200 per net ton.

	BUTTWELD												SEAMLESS											
	½ in.		¾ in.		1 in.		1¼ in.		1½ in.		2 in.		2½-3 in.		2 in.		2½-3 in.		3½-4 in.					
	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.				
STANDARD T. & C.																								
Sparrows Pt.-3	34.0	12.0	37.0	16.0	39.5	19.5	40.0	20.0	40.5	21.0	41.0	21.5	41.5	22.0										
Cleveland-4	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0										
Oakland-19	25.0	3.0	28.0	7.0	30.5	10.5	31.0	11.0	31.5	12.0	32.0	12.5	32.5	13.0										
Pittsburgh-5	36.0	14.0	39.0	17.0	41.5	19.5	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.5	29.5	8.0	32.5	11.5	34.5	13.5				
Pittsburgh-10	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0	29.5	9.5	32.5	12.5	34.5	14.5				
Alton, Ill.-32	35.0	13.0	38.0	17.0	40.5	20.5	41.0	21.0	41.5	22.0	42.0	22.5	42.5	23.0										
Sharon-90	36.0	13.0	39.0	17.0	41.5	20.0	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.0										
Pittsburgh-88	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0	29.5		32.5		34.5					
Wheeling-15	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0										
Wheatland-89	36.0	14.0	39.0	17.0	41.5	19.5	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.5										
Youngstown-6	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0	29.5	9.5	32.5	12.5	34.5	14.5				
EXTRA STRONG, PLAIN ENDS																								
Sparrows Pt.-3	33.5	13.0	37.5	17.0	39.5	20.5	40.0	21.0	40.5	22.0	41.0	22.5	41.5	23.0										
Cleveland-4	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0										
Oakland-19	24.5	4.0	28.5	8.0	30.5	11.5	31.0	12.0	31.5	13.0	32.0	13.5	32.5	14.0										
Pittsburgh-5	35.5	13.5	39.5	17.5	41.5	19.5	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.5	29.0	7.5	33.0	12.0	36.0	15.5				
Pittsburgh-10	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0	29.0	10.0	33.0	14.0	36.0	17.5				
Alton, Ill.-32	32.5	12.0	36.5	16.0	38.5	19.5	39.0	20.0	39.5	21.0	40.0	21.5	40.5	22.0										
Sharon-90	35.5	14.0	39.5	18.0	41.5	21.0	42.0	21.5	42.5	23.0	43.0	23.5	43.5	24.0										
Pittsburgh-88	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0	29.0		33.0		36.0					
Wheeling-15	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0										
Wheatland-89	35.5	13.5	39.5	17.5	41.5	19.5	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.5										
Youngstown-6	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0	29.0	10.0	33.0	14.0	36.0	17.5				

Galvanized discounts based on zinc, at 17¢ per lb, East St. Louis. For each 1¢ change in zinc, discounts vary as follows: ½ in., ¾ in., and 1 in., 1 pt.; 1¼ in., 1½ in., 2 in., ¾ pt.; 2½ in., 3 in., ½ pt. Calculate discounts on even cents per lb of zinc, i.e., if zinc is 16.51¢ to 17.50¢ per lb, use 17¢. Jones & Laughlin discounts apply only when zinc price changes 1¢. Threading only, butt weld and seamless, 1 pt. higher discount. Plain ends, butt weld and seamless, 3 in. and under, 3½ pts. higher discount. Butt weld jobbers' discount, 5 pct. East St. Louis zinc price now 19.50¢.

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Splices	Axles	Screw Splices	Truck Bolts	Truck Nuts
Bessemer-1	3.60	4.00	4.70					
Chicago-4				6.15				
Cleveland-3						9.35		
Ensey-11	3.60	4.00						
Fairfield-11			4.00	4.70	6.15	5.60		4.50
Gary-1	3.60	4.00						4.50
Ind. Harbor-8			4.00	4.70	6.15	5.60		4.50
Johntown-3			4.00	4.70				
Joliet-1								
Kansas City-83					6.40			9.35
Lackawanna-3	3.60	4.00	4.70					4.50
Lebanon-3						9.35		9.35
Minnequa-14	3.60	4.00	4.70					9.35
Pittsburgh-3								9.35
Pittsburgh-77								9.35
Pittsburgh-78								9.35
Pittsburgh-5					6.15			
Pittsburgh-24								4.65
Seattle-62					6.65			4.65
Steelton-3	3.60	4.70						4.50
Struthers-8					6.15			
Torrance-24								4.65
Youngstown-4					6.15			9.35
Cleveland-4								

BOILER TUBES

\$ Per 100 ft. cut, 10 to 24 ft.

F.o.b. Mill	Size	Seamless	Elec. Weld
	OD-In.	B.W. Ga.	H.R. C.D. H.R. C.D.
Babcock & Wilcox	2	13	22.67/26.66/21.99/25.96
	2½	12	30.46/35.84/29.57/34.75
	3	12	33.90/39.30/32.89/38.70
	3½	11	42.37/49.89/41.10/48.28
	4	10	52.80/61.89/51.03/60.02
National Tube	2	13	21.62/26.48
	2½	12	29.65/36.32
	3	12	34.00/41.64
	3½	11	40.34/49.41
	4	10	51.21/62.72
Pittsburgh Steel	2	13	27.06
	2½	12	30.49/37.15
	3	12	34.95/42.59
	3½	11	41.48/50.54
	4	10	52.65/64.16

Miscellaneous Prices

Base price, f.o.b., dollars per 100 lb. * (Metropolitan area delivery add 20¢ except Birmingham, San Francisco, Cincinnati, New Orleans, St. Paul, add 15¢; Memphis, add 10¢; Philadelphia, add 25¢; New York, add 30¢.)

WAREHOUSES

Cities	Sheets			Strip		Plates	Shapes	Bars		Alloy Bars			
	Hot-Rolled	Cold-Rolled (15 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled			Hot-Rolled	Cold-Finished	Hot-Rolled A 4615 As rolled	Hot-Rolled A 4140 Annealed	Cold-Drawn A 4615 As rolled	Cold-Drawn A 4140 Annealed
Baltimore	5.60	6.84	7.40 ² 8.07	6.04	.....	5.60	6.14	6.04	6.84 6.89	10.24	10.54	11.89	12.19
Birmingham*	5.60	6.40	6.75	5.55	.....	5.95	5.70	5.55	.....	.....	.....	.....	.....
Boston	6.20	7.00	7.74 8.29	6.15	6.50 ⁴	6.48 6.78	6.20	6.05	6.79 6.84	10.25	10.55	11.90 12.00	12.20 12.30
Buffalo	5.60	6.40	7.74 8.09	6.06	.....	6.05	5.80	5.60	6.40 6.45	10.15 10.85	10.45	11.80	11.95 12.10
Chicago	5.60	6.40	7.75	5.55	.....	5.80	5.70	5.55	6.30	9.80	10.10	11.45	11.75
Cincinnati*	5.87	6.44	7.39	.80	.....	6.19	6.09	5.80	6.61	10.15	10.45	11.80	12.10
Cleveland	5.60	6.40	8.10	5.60	6.90	5.92	5.82	5.57	6.40	9.91	10.21	11.56	11.86
Detroit	5.78	6.53	7.89	5.94	.....	5.99	6.09	5.84	6.56	10.11	10.41	11.76	12.06
Houston	7.00	8.25	.....	.....	.....	6.85	6.50	6.65	9.35	10.35	11.25	.....	12.75
Indianapolis, del'd	6.00	6.80	8.15	5.95	.....	6.20	6.10	5.95	6.89	.....	.....	.....	.....
Kansas City	6.00	6.80	7.45	6.15	7.50	6.40	6.30	6.15	7.00	10.40	10.70	12.05	12.35
Los Angeles	6.35	7.90	8.85	6.40	9.45 ⁴	6.40	6.35	6.35	8.20	11.30	11.30	13.20	13.50
Memphis*	6.33	7.08	.....	6.33	.....	6.43	6.33	6.08	7.16	.....	.....	.....	.....
Milwaukee	6.38	7.18	.....	6.38	.....	8.02	6.48	6.33	7.32	.....	.....	.....	.....
Milwaukee	5.74	6.54	7.80	5.69 6.59	.....	5.94	5.84	5.69	6.44 6.54	9.94	10.24	11.59	11.89
New Orleans*	5.70	6.50	.....	5.75	7.25	5.95	5.75	5.75	7.30	.....	.....	.....	.....
New York*	5.67	7.19 ¹	8.14 ²	6.29	8.63 ⁴	6.28	6.10	6.12	6.99	10.05	10.35	11.70	12.10
Norfolk	5.97	7.24 ¹	.....	6.89	.....	6.58	.....	.....	.....	10.15	10.45	11.80	12.20
Norfolk	6.50 ³	.....	.....	.....	.....	6.50 ³	6.60 ³	6.55 ³	.....	.....	.....	.....	.....
Philadelphia*	5.90	6.80	8.00	6.10	.....	6.05	5.90	6.05	6.86	9.90	10.20	.....	.....
Pittsburgh	5.80	6.40	7.75	5.65 5.95	.....	5.75	5.70	5.55	6.15	9.80	10.10	11.45	11.75
Portland	6.60	8.95	8.50 9.10	7.30	.....	6.80	6.95	6.90	.....	.....	12.15	.....	.....
Salt Lake City	7.55	.....	9.70	8.70	.....	8.05	6.75	7.95	9.00	.....	.....	.....	.....
Salt Lake City	7.95	.....	8.75 10.50 ²	7.75	.....	8.30	6.85	.....	.....	.....	.....	.....	.....
San Francisco*	6.65	8.05 ²	8.55 8.90 ²	6.60	9.95 ⁴	6.50	6.45	6.45	8.20	11.30	11.30	13.20	13.50
Seattle	7.05	8.60	9.20	9.05	.....	6.75	6.65	6.75	9.05	.....	.....	.....	.....
St. Louis	5.80	6.65	8.00	5.80	8.00 ⁴	6.13	6.03	5.80	6.55	10.05	10.35	11.70	12.00
St. Paul*	5.85	.....	.....	6.28	.....	6.85	.....	.....	.....	.....	.....	.....	.....
St. Paul*	6.15	8.96	8.31	6.11	.....	6.38	6.26	6.11	6.96	10.36	10.66	12.01	12.31

BASE QUANTITIES (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 9999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may not be combined with each other or with galvanizing sheets, for quantity. EXCEPTIONS: (1) 400 to 1499 lb; (2) 450 to 1499 lb; (3) 400 to 1999 lb; (4) 6000 lb and over; (5) 1500 to 9999 lb; (6) 2000 to 5999 lb.

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

Producing Point	Basic	Foundry	Malleable	Bessemer	Low Phos.	Blast Furnace Silvery	Low Phos. Charcoal
Bethlehem-3	54.00	54.50	55.00	55.50			
Birmingham-4	48.38	48.88					
Birmingham-81	48.38	48.88					
Birmingham-82	48.38	48.88					
Buffalo-4	52.00	52.50	53.00				
Buffalo-83	52.00	52.50	53.00				
Chicago-94	52.00	52.50	52.50	53.00			
Cleveland-2	52.00	52.50	52.50	53.00	57.00		
Cleveland-4	52.00	52.50	52.50				
Duquesne, Tex.-95	48.00	48.50	48.50				
Duluth-94	52.00	52.50	52.50	53.00			
Erie-94	52.00	52.50	52.50	53.00			
Everett, Mass.-96		57.00	57.50				
Fontana-19	56.00	56.50					
Genoa, Utah-16	52.00	52.50	52.50	53.00			
Granite City, Ill.-102	53.90	54.40	54.90				
Hudon, Ohio-6	52.00	52.50	52.50				
Ironton, Utah-16	52.00	52.50					
Jackson, Ohio-97, 98					52.50		
Lyle, Tenn.-101						66.00	
Monaca-18	54.00						
Neville Island-99	52.00	52.50	52.50	53.00			
Pittsburgh-1	52.00		53.00				
Sharpsville-100	52.00	52.50	52.50	53.00			
Steele-3	54.00	54.50	55.00	55.50	66.00		
Swedeland-25	56.00	56.50	57.00	57.50			
Toledo-94	52.00	52.50	52.50	53.00			
Troy, N. Y.-4	54.00	54.50	55.00				
Youngstown-5	52.00	52.50	52.50	53.00			
N. Tonawanda, N. Y.-105		52.50	53.00				

DIFFERENTIALS: Add 50¢ per ton for each 0.25 pct silicon over base, 1.75 to 2.25 pct, except low phos., 1.75 to 2.00 pct. 50¢ per ton for each 0.50 pct manganese over 1 pct. 32¢ per ton for 0.5 to 0.75 pct nickel. \$1 for each additional 0.25 pct nickel. Subtract 38¢ per ton for phosphorus, content 0.70 pct and over. Silvery iron: Add \$1.50 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 17 pct. \$1 per ton for 0.75 pct or more phosphorus, manganese as above. Bessemer rewall on prices are \$1 over comparable silvery iron.

REFRACTORIES

Fire Clay Brick

First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add \$5) \$34.60
No. 1 Ohio 88.00
Sec. quality, Pa., Md., Ky., Mo., Ill. 88.00
No. 2 Ohio 79.20
Ground fire clay, net ton, bulk (except Salina, Pa., add \$1.50) 13.75

Silica Brick

Mt. Union, Pa., Ensley, Ala. \$34.60
Childs, Pa. 99.00
Hays, Pa. 100.10
Chicago District 104.50
Western Utah and Calif. 111.10
Super Duty, Hays, Pa., Athens, Tex., Chicago 111.10
Silica cement, net ton, bulk, Eastern (except Hays, Pa.) 16.50
Silica cement, net ton, bulk, Hays, Pa. 18.70
Silica cement, net ton, bulk, Ensley, Ala. 17.60
Silica cement, net ton, bulk, Chicago District 17.60
Silica cement, net ton, bulk, Utah and Calif. 24.70

Chrome Brick

Per Net Ton

Standard chemically bonded, Balt., Chester \$51.00

Magnesite Brick

Standard, Baltimore \$104.00
Chemically bonded, Baltimore 93.00

Grain Magnesite

St. 1/4-in. grains

Domestic, f.o.b. Baltimore, in bulk fines removed \$62.70
Domestic, f.o.b. Chewelah, Wash., in bulk 36.30
in sacks 41.80

Dead Burned Dolomite

F.o.b. producing points in Pennsylvania, West Virginia and Ohio, per net ton, bulk Midwest, add 10¢; Missouri Valley, add 20¢ \$13.75

COKE

Furnace, beehive (f.o.b. oven) Net Ton
Connellsville, Pa. \$14.50 to \$15.00
Foundry, beehive (f.o.b. oven)
Connellsville, Pa. \$17.50 to \$18.00
Foundry, oven coke
Buffalo, del'd \$26.69
Chicago, f.o.b. 23.00
Detroit, f.o.b. 24.00
New England, del'd 21.80
Seaboard, N. J., f.o.b. 22.75
Philadelphia, f.o.b. 22.70
Swedeland, Pa., f.o.b. 22.60
Painesville, Ohio, f.o.b. 24.00
Erie, Pa., f.o.b. 23.50
Cleveland, del'd 25.72
Cincinnati, del'd 25.06
St. Paul, f.o.b. 22.50
St. Louis 25.40
Birmingham, del'd 21.69
Neville Island 23.00

LAKE SUPERIOR ORES

(51.50% Fe; natural content, delivered lower lake ports) Per gross ton
Old range, bessemer \$3.70
Old range, nonbessemer 8.55
Mesabi, bessemer 8.45
Mesabi, nonbessemer 8.30
High phosphorus 8.30
After adjustments for analyses, prices will be increased or decreased as the case may be for increases or decreases after Dec. 2, 1950, in lake vessel rates, upper lake rail freights, dock handling charges and taxes thereon.

C-R SPRING STEEL

F.o.b. Mill Cents Per Lb.	CARBON CONTENT				
	0.26-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.35
Bridgport, Conn.-58	5.35	6.80	7.40	9.35	11.65
Carnegie, Pa.-41	6.60	7.40	9.35	11.65	
Cleveland-2	4.65	6.45	7.40	9.35	11.65
Detroit-68	5.60	6.65	7.25		
New Castle, Pa.-40	5.35	6.80	7.40	9.35	
New Haven, Conn.-68	5.85	6.75	7.35		
Sharon, Pa.-13	5.35	6.80	7.40	9.35	11.65
Weirton, W. Va.-9	5.35	6.80	7.40	9.35	11.65
Worcester, Mass.-2	4.95	6.75	7.70	9.65	11.85
Youngstown-48		6.80	7.40	9.35	11.65

Miscellaneous Prices

BOLTS, NUTS, RIVETS, SCREWS

Consumer Prices

(Base discount, f.o.b. mill, Pittsburgh, Cleveland, Birmingham or Chicago)

Machine and Carriage Bolts

	Pct Off List	Less Case	C.
1/2 in. & smaller x 6 in. & shorter	15	28 1/2	
9/16 in. & 5/8 in. x 6 in. & shorter	18 1/2	30 1/2	
3/4 in. & larger x 6 in. & shorter	17 1/2	29 1/2	
All diam. longer than 6 in.	14	27 1/2	
Lag, all diam. x 6 in. & shorter	23	35	
Lag, all diam. longer than 6 in.	21	33	
Flow bolts	34		

Nuts, Hot Pressed, Cold Punched—Sq

	Pct Off List	Less Keg	Reg. K.	Less Keg	Hvy. K.
1/2 in. & smaller	15	28 1/2	15	28 1/2	
9/16 in. & 5/8 in.	25	6 1/2	21		
3/4 in. to 1 1/2 in.					
Inclusive	9	23	1	16 1/2	
1 1/2 in. & larger	7 1/2	22	1	16 1/2	

Nuts, Hot Pressed—Hexagon

	Pct Off List	Less Keg	Reg. K.	Less Keg	Hvy. K.
1/2 in. & smaller	26	37	22	34	
9/16 in. & 5/8 in.	16 1/2	29 1/2	6 1/2	21	
3/4 in. to 1 1/2 in.					
Inclusive	12	25	2	17 1/2	
1 1/2 in. & larger	8 1/2	23	2	17 1/2	

Nuts, Cold Punched—Hexagon

	Pct Off List	Less Keg	Reg. K.	Less Keg	Hvy. K.
1/2 in. & smaller	26	37	22	34	
9/16 in. & 5/8 in.	23	35	17 1/2	30 1/2	
3/4 in. to 1 1/2 in.					
Inclusive	19 1/2	31 1/2	12	25	
1 1/2 in. & larger	13	25	6 1/2	21	

Nuts, Semi-Finished—Hexagon

	Pct Off List	Less Keg	Reg. K.	Less Keg	Hvy. K.
1/2 in. & smaller	35	45	28 1/2	39 1/2	
9/16 in. & 5/8 in.	29 1/2	40 1/2	22	34	
3/4 in. to 1 1/2 in.					
Inclusive	24	36	15	28 1/2	
1 1/2 in. & larger	13	26	8 1/2	23	

Stove Bolts

	Pct Off List
Packaged, steel, plain finished	48-10
Packaged, plated finish	31-10
Bulk, plain finish	62*

*Discounts apply to bulk shipments in not less than 15,000 pieces of a size and kind where length is 3-in. and shorter; 5000 pieces for lengths longer than 3-in. For lesser quantities, packaged price applies.

**Zinc, Parkerized, cadmium or nickel plated finishes add 6¢ per lb net. For black oil finish, add 2¢ per lb net.

Rivets

	Base per 100 lb.
1/2 in. & larger	\$7.85
7/16 in. & smaller	36

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham, Lebanon, Pa.

Cap and Set Screws

	Pct Off List
Hexagon head cap screws, coarse or fine thread, 1/4 in. thru 3/4 in. x 6 in., SAE 1020, bright	54
3/4 in. thru 1 in. up to & including 6 in.	48
3/4 in. thru 3/4 in. x 6 in. & shorter high C double heat treat	46
3/4 in. thru 1 in. up to & including 6 in.	41
Flat head cap screws, listed sizes	35
Fillister head cap, listed sizes	16
Set screws, sq head, cup point, 1 in. diam. and smaller x 6 in. & shorter	53

S. M. Ferrochrome

Contract price, cents per pound, chromium contained, lump size, delivered.	
High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.	21.60
Carloads	23.75
Ton lots	25.25
Less ton lots	25.25
Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.	27.75
Carloads	30.05
Ton lots	31.85
Less ton lots	31.85

ELECTRODES

Cents per lb., f.o.b., plant threaded electrodes with nipples, unboxed

Diam. in in.	Length in in.	Cents Per lb.
GRAPHITE		
17, 18, 20	60, 72	17.85
8 to 16	48, 60, 72	17.85
7	48, 60	19.57
6	48, 60	20.95
4, 5	40	21.50
3	40	22.61
2 1/2	24, 30	23.15
2	24, 30	25.36
CARBON		
40	100, 110	8.03
35	65, 110	8.03
30	65, 84, 110	8.03
24	72 to 104	8.03
20	84, 90	8.03
17	60, 72	8.03
14	60, 72	8.57
10, 12	60	8.84
8	60	9.10

CLAD STEEL

Base prices, cents per pound, f.o.b., mill	Plate	Sheet
Stainless-carbon		
No. 304, 20 pct.		
Coatesville, Pa. (21)...	*29.5	
Washingtn., Pa. (39)....	*29.5	
Claymont, Del. (29)....	*28.00	
Conshohocken, Pa. (26)	*27.50	
New Castle, Ind. (55)...	*26.50	*25.50
Nickel-carbon		
10 pct Coatesville (21)...	32.5	
Inconel-carbon		
10 pct Coatesville (21)...	40.5	
Monel-carbon		
10 pct Coatesville (21)...	33.5	
No. 302 Stainless-copper stainless, Carnegie, Pa. (60).....		77.00
Aluminized steel sheets, hot dip, Butler, Pa. (7).....		7.75

*Includes annealing and pickling, or sandblasting.

TOOL STEEL

F.o.b. mill	Base per lb
W	18.00
Cr	4
V	1
Mo	5
Co	11.65
1.5	4
1.5	8
6	4
6	8
High-carbon chromium	63.5¢
Oil hardened manganese	35¢
Special carbon	32.5¢
Extra carbon	27¢
Regular carbon	23¢
Warehouse prices on and east of Mississippi are 3.5¢ per lb higher. West of Mississippi, 5.5¢ higher.	

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.	
Swedish sponge iron c.l.f.	
New York, ocean bags...	7.4¢ to 9.0¢
Canadian sponge iron, del'd, In East	10.00¢
Domestic sponge iron, 98+%	
Fe, carload lots	15.5¢ to 17.0¢
Electrolytic iron, annealed, 99.5+% Fe	42.5¢
Electrolytic iron, unannealed, minus 325 mesh, 99+% Fe	53.5¢
Hydrogen reduced iron, minus 300 mesh, 98+% Fe	63.0¢ to 80.0¢
Carbonyl iron, size 5 to 10 micron, 98%, 99.8+% Fe	83.0¢ to 114.8¢
Aluminum	31.5¢
Brass, 10 ton lots	30.00¢ to 33.25¢
Copper, electrolytic, 10.75¢ plus metal value	
Copper, reduced	10.00¢ plus metal value
Cadmium, 100-199 lb 95¢ plus metal value	
Chromium, electrolytic, 99% min., and quantity, del'd.	33.50
Lead	7.5¢ to 12.0¢ plus metal value
Manganese	57.0¢
Molybdenum, 99%	82.75
Nickel, unannealed	85.0¢
Nickel, annealed	95.0¢
Nickel, spherical, unannealed	95.0¢
Silicon	35.5¢
Solder powder, 7.0¢ to 9.0¢ plus met. value	
Stainless steel, 302	83.00¢
Stainless steel, 316	81.10
Tin	14.00¢ plus metal value
Tungsten, 99% (65 mesh)...	16.00
Zinc, 10 ton lots	23.0¢ to 30.5¢

ELECTRICAL SHEETS

22 Ga. H-R cut lengths

F.o.b. Mill Cents Per Lb.	Armature	Elec.	Motor	Dynamo	Transf. 72	Transf. 68	Transf. 58
Beech-Bottom-16	7.25	8.50	9.30	9.85	10.40	11.10	
Brackenridge-28	7.25	8.50	9.30	9.85	10.40	11.10	
Follansbee-C3	6.75	7.25	8.50	9.30	9.85	10.40	11.10
Granite City-22	7.95	9.25					
Ind. Harbor-3	6.75	7.25					
Mansfield-75	7.25	7.75	9.00	9.80			
Niles O-64	7.05	7.55					
Vandergrift-1	6.75	7.25	8.50	9.30	9.85	10.40	11.10
Warren O-4	6.75	7.25	8.50	9.30	9.85	10.40	11.10
Zanesville-7	6.75	7.25	8.50	9.30	9.85	10.40	11.10

Ferrochrome

Contract prices, cents per pound, contained Cr, lump size, bulk, in carloads delivered. (65-72% Cr, 2% max. Si.)	
0.06% C ... 30.50	0.20% C ... 29.50
0.10% C ... 30.00	0.50% C ... 29.25
0.15% C ... 29.75	1.00% C ... 29.00
2.00% C	
65-69% Cr, 4-9% C	28.75
62-66% Cr, 4-6% C, 6-9% Si	22.60

Foundry Ferrochrome

Contract prices, cents per lb of alloy	
Noncontract prices add 0.25¢ per lb.	
High carbon 8 mesh and down.	
62 to 66% Cr, 5 to 7% C, 7 to 10% Si	
Carloads, bulk	23.25
Carloads, packed	24.15
Ton lots, packed	27.25

High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 5¢ for each additional 0.25% N.	
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Chromium Metal

Contract prices, per lb chromium contained, packed, delivered, ton lots. 97% min. Cr, 1% max. Fe.	
0.10% max. C	\$11.4
0.50% max. C	1.10
9 to 11% C	1.08

Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-49%, C 0.05% max.)	
Contract price, carloads, f.o.b. Niagara Falls, freight allowed: lump 4-in. x down bulk 2-in. x down, 21.75¢ per lb of contained Cr plus 12.40¢ per lb of contained Si.	
Bulk 1-in. x down, 21.90¢ per lb contained Cr plus 12.60¢ per lb contained Si.	

Calcium-Silicon

Contract price per lb of alloy, dump delivered.	
30-33% Ca, 60-65% Si, 3.00% max. Fe.	
Carloads	19.00
Ton lots	22.10
Less ton lots	23.60

Calcium-Manganese-Silicon

Contract prices, cents per lb of alloy lump, delivered.	
16-20% Ca, 14-18% Mn, 53-59% Si	
Carloads	20.00
Ton lots	22.30
Less ton lots	23.30

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. V-5: 38-42% Cr, 17-19% Si, 8-11% Mn.	
Ton lots	16.50¢
Less ton lots	17.75¢

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.	
Carload packed	19.00¢
Ton lots to carload packed	19.00¢
Less ton lots	20.50¢

SMZ

Contract price, cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zn, 20% Fe, 1/2 in. x 12 mesh.	
Ton lots	17.50
Less ton lots	19.50

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TRANSFERS
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STANDS
SLITTERS—SPECIAL SHEARS AND
GAUGES
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LIFTING TABLES
CONTINUOUS PICKLING LINES—
ROLLER LEVELLERS
FURNACE CHARGING EQUIPMENT
—FURNACE PUSHERS
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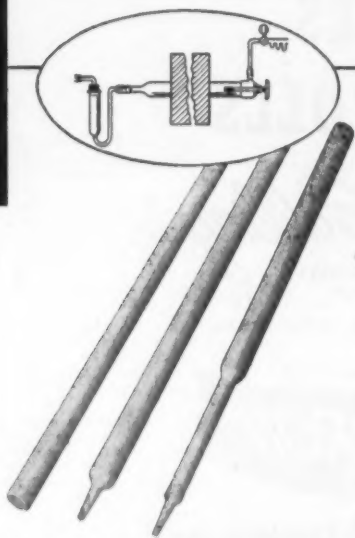
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Ferroalloy Prices

Ferromanganese

78-82% Mn. maximum contract basis price, gross ton, lump size.
F.o.b. Niagara Falls, Alloy, W. Va., Ashtabula, O. \$155
F.o.b. Johnstown, Pa. \$157
F.o.b. Sheridan, Pa. \$158
F.o.b. Etna, Clairton, Pa. \$160
\$2.00 for each 1% above 82% Mn. penalty, \$2.15 for each 1% below 78%
Briquets—Cents per pound of briquet, delivered, 66% contained Mn.
Carload, bulk 10.35
Ton lots 12.55

Spiegeleisen

Contract prices gross ton, lump, f.a.b.
16-18% Mn. 19-21% Mn.
3% max. Si 3% max. Si
Palmerton, Pa. \$74.00 \$75.00
Pgh. or Chicago 75.00 76.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.
96% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.
Carload, packed 34.75
Ton lots 35.25

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.
Carloads 22
Ton lots 23
Less ton lots 21

Medium Carbon Ferromanganese

Mn 80% to 85%, C 1.25 to 1.50. Contract price, carloads, lump, bulk, delivered, per lb. of contained Mn 19.15

Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots	\$2.05	\$2.35	\$3.75
Less ton lots	2.40	3.30	4.55

Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5% max. C. For 2% max. C, deduct 0.2¢.
Carload bulk 9.90
Ton lots 11.55
Briquet, contract basis carlots, bulk delivered, per lb of briquet 11.15
Ton lots 12.75

Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., \$92.50 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., \$90.00. Add \$1.00 per ton for each additional 0.50% Si up to and including 18%. Add \$1.00 for each 0.50% Mn over 1%.

Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, for ton lots packed.
96% Si, 2% Fe 21.75
97% Si, 1% Fe 22.10

Silicon Briquets

Contract price, cents per pound of briquet bulk, delivered, 40% Si, 3 lb 81 briquets.
Carload, bulk 8.35
Ton lots 8.55

Electric Ferrosilicon

Contract price, cents per pound contained Si, lump, bulk, carloads, delivered.
25% Si 20.00 75% Si 14.10
50% Si 12.40 85% Si 15.55
90-95% Si 17.10

Low-Carbon Ferromanganese

Contract price, cents per pound Mn contained, lump size, del'd. Mn 85-90%.
Carloads Ton Less
0.7% max. C, 0.06% P, 90% Mn 26.25 23.10 23.30
0.07% max. C 25.75 27.40 28.10
0.15% max. C 25.25 27.10 28.30
0.30% max. C 24.75 26.60 27.90
0.50% max. C 24.25 26.10 27.30
0.75% max. C 23.75 25.60 26.80
7.00% max. Si 21.25 23.10 24.30



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Ferroalloy Prices

Alsilfer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y.	
Carload	9.90¢
Ton lots	11.30¢
Calcium molybdate, 45-40%, f.o.b. Langeloth, Pa., per pound contained Mo.	11.15
Ferrocolumbium, 50-60%, 2 in. x D, contract basis, delivered, per pound contained Cb.	
Ton lots	4.90
Less ton lots	4.95
Ferro - Tantalum - columbium, 20% Ta, 40% Cb, 0.30 C. Contract basis, delivered, ton lots, 2 in. x D, per lb of contained Cb plus Ta	3.75
Ferromolybdenum, 55-75%, f.o.b. Langeloth, Pa., per pound contained Mo.	11.32
Ferrophosphorus, electrolytic, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., \$3 unitage, per gross ton	65.00
10 tons to less carload	75.00
Ferrotitanium, 40%, regular grade, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti	11.35
Ferrotitanium, 25%, low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti	11.56
Less ton lots	1.55
Ferrotitanium, 15 to 18%, high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton	177.00
Ferrotungsten, standard, lump or 1/4 x down, packed, per pound contained W, 5 ton lots, delivered	35.00
Ferrovandium, 35-55%, contract basis, delivered, per pound, contained V.	
Openhearth	3.00-3.10
Crucible	3.10-3.20
High speed steel (Primos)	3.20-3.25
Molybde oxide, briquets or cans, per lb contained Mo, f.o.b. Langeloth, Pa.	11.14
bags, f.o.b. Washington, Pa., Langeloth, Pa.	11.13
Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound	
Carload, bulk lump	14.50¢
Ton lots, bulk lump	15.75¢
Less ton lots, lump	16.25¢
Vanadium pentoxide, 86-88% V ₂ O ₅ , contract basis, per pound contained V ₂ O ₅	11.28
Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.	
Ton lots	21.00¢
Zirconium, 12-15% contract basis, lump, delivered, per lb of alloy.	
Carload, bulk	7.00¢
Boron Agents	
Contract prices per lb of alloy, del. Borosil, f.o.b. Philo, Ohio, freight allowed, B, 3-4%, Si, 40-45%, per lb contained B	35.25
Bortam, f.o.b. Niagara Falls	
Ton lots, per pound	45¢
Less ton lots, per pound	50¢
Carbortam, Ti, 15-21% B, 1-2% Si, 2-4% Al, 1-2% C, 4.5-7.5% f.o.b. Suspension Bridge, N. Y., freight allowed.	
Ton lots, per pound	10.00¢
Ferroboration, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D. Ton lots	11.20
F.o.b. Wash., Pa.; 100 lb up	
10 to 14% B.	.85
14 to 19% B.	1.20
19% min. B.	1.50
Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over.	
No. 1	1.00
No. 6	.84
No. 79	.50¢
Manganese-Boron 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd	
Ton lots	11.46
Less ton lots	1.57
Nickel-Boron 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, delivered.	
Less ton lots	11.80
Silicaz, contract basis, delivered.	
Ton lots	45.00¢

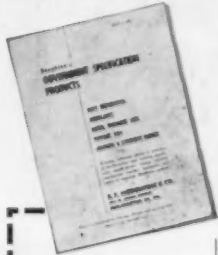
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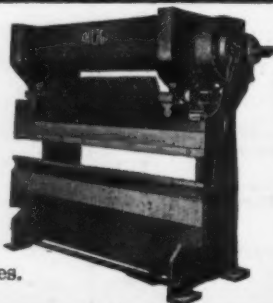
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NEWS OF USED, REBUILT AND SURPLUS MACHINERY

A full panel of Office of Price Stabilization officials met with a committee representing 66 used machinery dealers in North Atlantic states to talk over difficulties of CPR 80, which establishes ceiling prices for used machine tools. The meeting was rescheduled for Saturday morning after the committee had been grounded by rain on Friday.

Although an OPS press release noncommittally stated that the next move toward changing CPR 80 is up to industry as a whole, the committee felt that OPS was preparing to grant concessions aiding dealers in "as is" category equipment.

Asks for Cases—Details of recommendations were listed in last week's column. One of the charges made by the committee was that "low" prices set by CPR 80's percentage pricing table were contrary to the Capehart Amendment. OPS men asked for specific instances where this was so and the committee is preparing a list.

OPS asked the committee what it thought of alternate plans of pricing—including a suggestion for setting up a standard depreciation factor. But the committee admits that it prefers a return to old OPA pricing by equivalency and the backing of a 30-day guarantee on tools sold.

New Members?—OPS also requested names of six dealers with no rebuilding facilities. Intent may be to include them on the industry's advisory committee to OPS. This, the committee said, may balance the "dominating" number of rebuilders on the original advisory committee.

The committee representing the 66 dealers met again last Friday. It believed that OPS was preparing to call another meeting of an enlarged industry committee to thrash out problems of CPR 80.

Demand Holds—Regardless of difficulties in pricing, demand for tools in the Cleveland area is high. Though some buyers will take anything they can get their hands on, others still want to be particular. Dealers are having a job keeping up with requests. Opinion on the worthiness of CPR 80 differs drastically between rebuilders and "as is" dealers.

Training Workers—Good mechanics are at a premium now with a greater demand for experienced, skilled help. Most rebuilders claim labor turnover has been no greater than before the emergency but to find additional skilled help has been a problem. Many shops have increased their manpower force by as much as 15 pct or better and would like to take on more to keep up with delivery promises.

Training programs have been established in many places.

Surplus Equipment—Rebuilders who have contracted to put surplus tools back in operating condition are having their troubles. These tools are classed by one rebuilder as "very poor to good." Conditions of the tools depend largely on where they were stored or the method of preservation used.

Some surplus equipment, improperly preserved, is now rusted and pitted, requiring complete clean-up and planing. Other instances indicate that too much care had been given.

For example, valve packings had been removed or oil seals cleaned, then packed with preservatives which are now difficult to remove. Specifications have to be checked to determine type of packing originally used. Often, replacement parts for these tools are no longer found on manufacturers' shelves and must be specially made.

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